



FRIDAY, AUGUST 8.

### Standard Draw Gear for Freight Cars, Norfolk & Western Railroad.

We illustrate the form of standard freight-car draw gear used on the Norfolk & Western Railroad. The method of construction is so clearly shown that but little description is necessary. It will be observed that the whole of the draw gear can be taken down for repair by slackening two nuts, without removing any of the timbers.

### Contributions.

#### Foreign Fire-box Steel.

Grand Trunk Railway of Canada,  
MONTREAL, July 28, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

As this subject is considered of interest, I take the opportunity to corroborate Mr. Brown's statement in your issue of July 18, respecting the use of English and foreign steel in locomotive fire-boxes. I can moreover go further and say that, though in limited quantities, I have used such steel since the year 1873 with the best possible result.

Since the year 1879 heavy renewals of fire-boxes have been required in connection with the large number of locomotives purchased at the time of the change of gauge of this railway in 1873; these, in addition to new locomotives con-

the same uniformity in removing the ties, as it frequently occurs that trackmen are obliged to put in much smaller ties than they take out. For instance, two ties of 14 inches face may have to be replaced with ties of only 8 inches face. In such a case the space between bearing surfaces would be increased from 16 inches to 22 inches, which, according to Mr. Low's own calculation, would not give proper support to the rail; but by spacing the ties from centre to centre, and making that distance such that any first-class tie will give all the support necessary to maintain a good track, I think we will gain an advantage that cannot be compensated by the economical method suggested by Mr. Low.

H. WARE,

Road-master, Rochester &amp; Pittsburgh Railroad.

### Train Signals.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Your correspondent "Senex" seems to have succeeded in packing some good large chunks of "horse sense" into his letter of July 18 and your suggestion as to the advisability of repeating important facts tempts me to apply the principle to that letter and reprint portions of it in "display" type where he who runs may read. Resisting this impulse, however, except heartily to indorse what "Senex" says in regard to the necessity (and the profit) of having men instead of automotons to do railroad work, I beg to suggest, from my own observation, a sensible and simple way of solving the difficulty in regard to making motions when the engine which is pulling is moving backward.

"Senex" says that his experience goes to show that motions are made with reference to the position of the engine. This way has reason on its side, for the motions

those who attribute "greenness" to any one seen using it; assuming, with some reason, that as soon as one's inexperience is in any degree worn off, he will adopt some more effective way of expressing himself. Where the "sweeping parting" is used to go ahead, it is, I think, generally confined to switching operations, the motion for going ahead to the next station (or "all right") being the familiar one of an uplifted arm. This (the hand held perpendicularly above the head) is nearly the same in principle as the motion recommended by the committee, but even this has to be modified in practice, every one has doubtless noticed; the conductor who wishes to attract the attention of the engineman not only extends his hand and arm upward (to correspond with the semaphore post when the blade is down), but slightly vibrates it, so that a motion and not merely an object may be visible.

The only safe rule in regard to torpedoes seems to be to instruct the brakeman to put two or more of them on the rail and then have the engineman understand that he must stop, whatever number he bears, whether it be one or more. Two for danger and one caution is about as bad as the opposite. By the way, what is the difference between "danger" and "caution"? "Caution" certainly ought to mean enough to induce the runner to get his train immediately under control; and when he has done that he is prepared for danger, isn't he?

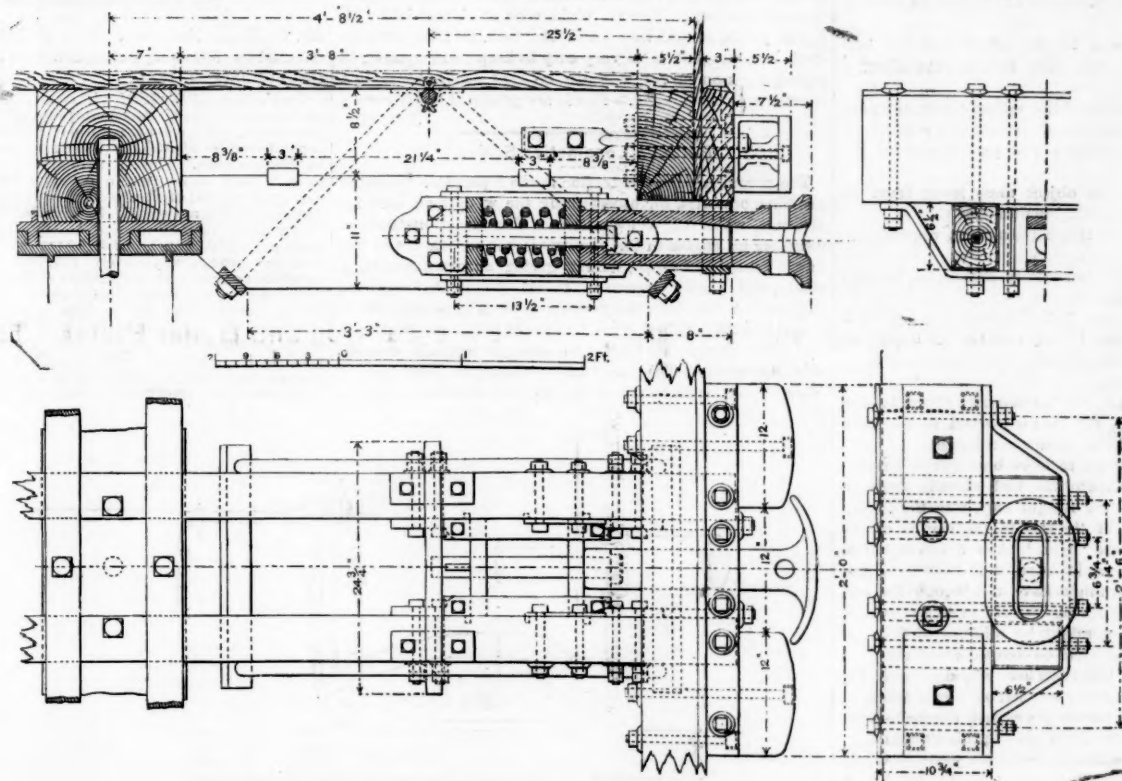
B. B. ADAMS, JR.

### Spring Nut-Locks.

NEW YORK, Aug. 2, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of the 1st inst. there is found, accompanying an illustration of a recently invented elastic steel nut-lock washer, the following statement from a correspondent.



STANDARD DRAW GEAR FOR FREIGHT CARS, NORFOLK & WESTERN RAILROAD.

structed, aggregate 256 fire-boxes, of which the material of only seven is of American manufacture.

While American steel is equal, it is not superior in quality, so far as my experience goes, to English and foreign steel, the cost (the customs duty being the same in both cases) puts it entirely out of our market.

HERBERT WALLIS,  
Mechanical Superintendent.

### Spacing Ties.

SPRINGVILLE, N. Y., July 29, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of July 25, I read with interest the suggestion of Mr. Low in regard to the spacing of ties. I think the proper spacing of ties in the laying of new track and in renewing ties in old track is deserving of more care than is generally considered necessary by trackmen. I think the main point to be considered in placing ties in the track is to give the rails as uniform a bearing as possible, but with the present practice of buying ties of various widths, it is impossible to gain the uniformity necessary to a perfect track. I think the saving in ties, as suggested by Mr. Low's method of spacing, would have to be made by a corresponding sacrifice to the support of the rail which would be gained by the usual practice of spacing ties from centre to centre. As must be noticed by those having charge of maintenance of track on roads doing a heavy traffic, ties are cut out by the rail faster than they rot. Such being the case, I do not think the additional bearing surface which is given the rail by spacing ties from centre to centre, as is generally done, is any loss to the maintenance of a good track.

If a track should be laid with the ties spaced according to Mr. Low's table, would it not be very difficult to maintain

are made, primarily, for the information of the runner, and he, of course, understands that when the engine moves backward he is backing, and that when it moves forward he is going ahead, whichever side of him the cars happen to be. Moreover, in switching it frequently becomes necessary to "cut off the engine" and go on to another track; then (when the engine is by itself) it is the most natural thing in the world to say (if the engine is facing the train), "back out and go on to . . . track;" and, to be consistent, the same rule must be observed when cars are attached.

This question, however, may be obviated, and is largely obviated in practice, by taking into consideration the relative positions of the person who gives the signal and the one for whom it is given: thus, instead of prescribing a motion for "go ahead," make the rule read:

"A sweeping parting of the hands (on a level with the eye) is a direction for the train (or engine) to be moved from the person giving the signal"—and instead of "back up" say—

"A beckoning motion with one hand (or, the hand swung in a circle at right angle to the track) is a direction for the train to be moved toward the person giving the signal."

This works well in practice, and makes it immaterial whether the engine faces toward the cars or from them. I have never seen this principle applied to lantern signals, but see no reason why it would not work with them equally well. As long as signals are made to mean "go ahead" and "back up," men who habitually do switching with the engine facing the train will, when it is occasionally made to face the other way, give the wrong signal unless they are extremely careful.

As "Senex" says, the up-and-down motion of the hand is not a good daylight signal, even if it is one which an inexperienced person would naturally adopt. In fact there are

"The wear of roughness and scale from the bearing surfaces of rails, fish-plates and, frequently, ill-fitting bolt-heads, is in a short time very considerable in ordinary new joints, and is continuous, to a greater or less extent, afterward, making it necessary to frequently tighten up loose bolts, even when the nuts have not changed in their positions.

"The great stiffness and range of spring motion of the elastic steel washer take up this wear and greatly lessen it by maintaining a constant tensile strain on the bolts, which also secures a permanently firm joint."

The point to which, I think, particular attention should be directed is whether any elastic nut-locks can be made which will secure, because of its elasticity, permanent firmness in a joint which is wearing, or has become worn at its bearing surfaces, and which without the interposition of elastic nut-locks would be apparently as well as really loose.

After the removal of the scale, rust, etc., from the new material, there is, as your correspondent says, a continuous wear of the parts of the joint at its bearings, which makes it necessary to tighten nuts which have not moved in their position on the bolts.

Now if this continuous wear was wholly due to the longitudinal contraction and expansion of the parts and the consequent rubbing together of their bearings, or to the blow and concussion of the wheels on joints well supported by ties, it is very probable that an elastic washer would have sufficient power to wedge the plates well under the heads of the rails, and thus prevent the joint from rattling under trains.

Unfortunately, this wear, which to distinguish it from that involved in the loss of scale, etc., from new material is called continuous wear, is almost wholly due to the lack of proper support on the part of the joint ties. The joint ties by gradually settling in their beds, or by the uneven cutting



of the bases of the rails into them, allow the rail ends to depress under weights, and the strain which they should properly bear is thrown on the plates and bolts. The bolts will elongate slightly, and then the wear begins. To withstand this enormous lateral pressure the comparatively feeble elastic washer is offered. When it is used and the conditions above described exist, a joint which is *really* loose is made, when the weight is removed, to appear firm; the elastic washers having sufficient power to push back to place, as the rail ends spring up, the plates which have been forced outward. Over a joint in this condition the wheels will jump and hammer the rail ends, and yet if it be fitted up with elastic washers the plates and bolts will fail to give their rattling note of warning.

It seems to me it is not wise to dose the baby with laudanum merely to keep it quiet, nor to stop the noise of a weak joint by elastic washers.

F. H. HOWES.

#### Automatic Couplers.

TO THE EDITOR OF THE RAILROAD GAZETTE:

It is understood that one of the practical results of the meeting of the Master Car-Builders at Saratoga in June last is that an effort will be made to have a general test of freight-car couplers, under the joint direction of the Secretary of the Master Car-Builders' Association and the railway companies.

Before this takes place would it not be desirable that the subject should be more fully discussed through the columns of appropriate journals than was possible in the brief period given to it at the annual convention?

The speaking on the subject was done by a limited number of persons, and from the conflicting character of the resolutions it would seem that some of these spoke without preparation.

One of the resolutions was to the effect that the best coupler mechanically is one that will operate along a vertical plane.

Now, considering the fact that the railway companies are looking for the best "automatic" freight-car coupler, it would appear that this resolution was passed without reflection.

To move automatically, an object must move from its own impulse, or, in other words, spontaneously.

The apple falling from the tree is the nearest approach to this action.

No freight-car coupler can be entirely automatic, because it is impelled by the engine.

The link-and-pin and the link-and-hook moving on a horizontal plane and acting by gravity (as the apple), of course come nearer to pure automatic action than any other form of coupler.

The reason assigned for the preference given to the "vertical plane" principle, was that it worked better when the cars to be coupled were of an unequal height.

But even this reason seems to have been given hastily. Because the Executive Committee had already declared that the standard height for freight cars was 2 ft. 9 in., measuring from the top of the rail to the centre of the draw bar, when the car was "light." And it was stated in this connection that a car might have in it 10,000 lbs. and be loaded, and another car might have in it 60,000 lbs. and be loaded. In the first the springs would yield perhaps  $\frac{1}{2}$  in. and in the second they might be compressed 2 in., if springs could be found that could be compressed so much.

Given a level track, the variation here would be only  $\frac{1}{2}$  in., and freight cars are usually coupled on a level track.

It was also said that for twelve years past nineteen-twentieths of all freight cars have been built to this standard.

Now, as the life of a freight car is only ten years, it would appear that this much-talked-of variation in height of freight cars is a mere bugbear.

My object in addressing you is to ask for the published views of yourself and others.

If it were certain that Mr. Forney would act, the matter would be in safe hands. But it is not. His views are not known, but they would doubtless give satisfaction.

Can the present average variation in height of draw-bars on freight cars be approximately ascertained? AUTOS.

SOUTH ORANGE, N. J., Aug. 4, 1884.

[We do not understand that the master car-builders are in search of an *automatic* car-coupler, but of a car-coupler which will not require men to go between the cars when coupling. The object aimed at is safety, not automaticity, labor-saving, or anything of that kind. All automatic couplers probably will be safety couplers, but all safety couplers will not necessarily be automatic couplers.

As to the probability that the tests proposed by the Car-Builders' Association will be made, we learn nothing as yet. The Association has expressed a desire that they be made, and that Mr. Forney should make them, and that the railroad companies should provide the means. The Association itself has no means, and all that can be done now to further its plan is for the individual members, and other persons who realize the importance that something should be done to save the lives and limbs sacrificed by the present method, to urge the matter upon those railroad officers who control the action and expenditures of their corporations.

As to Mr. Forney's "views," we think we are safe in saying that he hasn't any—that is, that he has very little idea what the result of an investigation made by

himself would be. It is because the conditions of the problem and the effectiveness of different appliances are so uncertain, or so little known, that an investigation is needed. As to whether coupling in a vertical or horizontal plane is preferable, he would doubtless have an opinion after having tested the different methods.—EDITOR RAILROAD GAZETTE.]

#### Even vs. Broken Joints.

ST. LOUIS, Mo., July 29, 1884.

TO THE EDITOR OF THE RAILROAD GAZETTE:

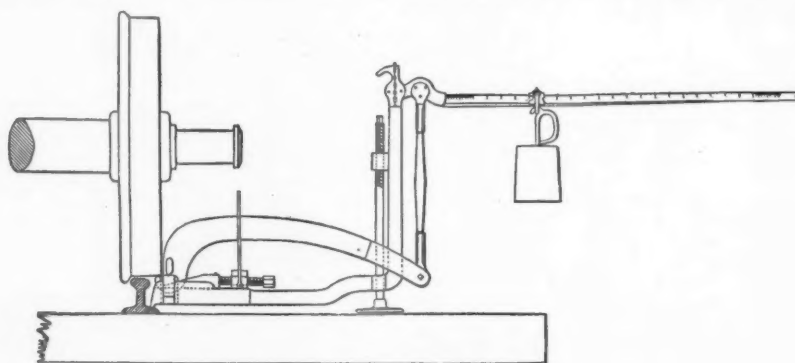
A few years ago the company that I was with let the contract to lay 50 miles of track. After the contract was let there was a dispute between the Chief Engineer and the contractor as to how the track was to be laid, whether with square joints or broken joints. I was Superintendent of the line at the time, and they agreed to leave the matter with me. In the mean time the directors and other officers on the road had got hold of the question, and there was a good deal of talk. One of the officers of the road came to me and told me that if the road was laid with broken joints in bad weather the cars would not stay on the track; that he has been on roads that had broken joints and they were compelled to change them on that account. As it was agreed to leave everything to me, I concluded that it was best to experiment a little; so I told them to lay the first  $12\frac{1}{2}$  miles with square or even joints; the next  $12\frac{1}{2}$  miles with broken joints; the third  $12\frac{1}{2}$  miles with square joints, and the last  $12\frac{1}{2}$  miles with broken joints, making in all 50 miles.

This was all done according to order and a correct account kept of it in different sections of  $12\frac{1}{2}$  miles as regards the cost of keeping it up, wear and tear, etc.; and at the expiration of three years it was relaid with steel, and laid with square joints, as that was found the best, all things considered. On tangent it is very easy to keep them square; in laying track on curves, they can be kept square by using a shorter rail occasionally. This is my practical experience.

J. A. H.

#### Portable Locomotive Scales.

The accompanying illustration shows a portable weighing machine, or scales, for ascertaining the weight on each individual wheel of a locomotive. The usual method of weighing an engine in this country is not accurate, and the method usual in Europe, though giving accurate results, is costly, and hardly applicable to all classes of American engines. A European weigh-table is usually composed of several distinct tables placed close together, so that each wheel is on a separate table. In order to weigh a consolidation engine, at least ten tables would be required. A weigh-table, sufficiently large to accommodate a large



PORTABLE LOCOMOTIVE SCALES.

engine, is a somewhat expensive article in itself, and moreover requires a deep foundation and should be protected by a building provided with a good roof, several windows and a pair of large, well-fitting doors. While weigh-bridges may be placed in the open air, it is generally short-sighted economy to do so. Dust and mud affect and rust the delicate knife-edges on which the levers work, and soon impair the efficiency of the machine, and render its indications untrustworthy. The foundations of the machine must also be carefully and firmly laid, any unequal settlement of course affecting the position of the levers and giving incorrect weights. A portable machine, while far cheaper, is nearly as accurate as an ordinary locomotive scales in good order, and as it can be stowed away in a dry place when not in use, can always be kept in good condition. Its parts, moreover, are always open to inspection, and can be readily kept clean.

Portable scales or weighing machines of somewhat similar construction, were first, we believe, used in Germany some fifteen years ago, but the machine we illustrate is constructed by the Howe Scale Company, and contains several improvements dictated by the experience gained in their use in Europe.

The construction and method of using the portable machine is clearly shown in the accompanying illustration. Accurate results are best obtained by using a scale to each wheel, and using them all simultaneously, but it is of course possible to use but one scale and weigh each wheel in succession. As, however, the wheel as weighed is slightly lifted from the rail, the spring of the wheel being weighed receives an extra amount of compression, and shows consequently an increased weight on the scale.

To weigh a locomotive, a scale is set on a substantial base

opposite each wheel, with the lip on the short end of the main lever under that portion of the tread of wheel which projects beyond the outside of the rail-head. When the lever is properly engaged, by sliding the weight a sufficient distance along the graduated beam, the wheel is lifted from the rail, and, each scale being operated in a similar manner, all the wheels of the locomotive are raised from the rail and are carried on the scales, enabling the operator to note the actual weight upon each bearing, and their joint weights give the actual weight of the whole locomotive. Having the locomotive thus suspended on these several scales, clear of track, any unintentional or improper distribution of weight is at once shown, and to what degree, enabling the constructor to rectify any such defect. The effect of foot-plates of various weights on a locomotive can be watched, and by adding to or reducing the weight of the plate, the load on the truck can be reduced or increased, within limits, to suit requirements.

Each scale complete weighs about 150 lbs., and can, therefore, be readily moved by one man. They are simply and strongly constructed, and, consequently, not likely to require frequent adjustment or repairs, and, considering the not altogether satisfactory means hitherto adopted for obtaining in detail the weight of a locomotive, it appears strange that this simple way of overcoming the difficulty had not long ago been attempted in this country.

The first set of portable engine scales capable of weighing at once the load on each of the ten wheels of a Consolidation engine were made last year, for Mr. Charles Blackwell, Superintendent of Motive Power of the Norfolk & Western Railroad, and for use in the shops built by that gentleman for the Roanoke Machine Works, at Roanoke, Va.

#### The Law of Railroad Receivers.

Mr. C. Stuart Patterson, of the Philadelphia bar, has contributed the following timely article to the *Weekly Notes of Cases* of July 24, 1884:

Poor's Manual for 1884 will report that the 120,551 miles of railway in the United States represented, on the 31st of December, 1883, a share capital of \$3,638,060,583, and were encumbered by \$3,455,046,383 of funded and \$402,371,345 of floating debt. These figures are startling in their magnitude. They show that a considerable proportion of the moneyed capital of the country is invested in railway obligations, which are so widely distributed that any diminution in their yield of income, or any impairment or loss of their principal, causes far-reaching suffering and distress. Railway enterprises are not invariably successful, nor do purchases of railway obligations uniformly yield the anticipated income, or, in all cases, return the invested principal. At the present time the country is passing through one of those periods of depression in which the earnings of all railways are diminished and the insolvency of some railways confessed. There are, therefore, few chapters of law of as general and timely interest as that which treats of the administration of insolvent railway corporations by means of

receivers appointed by courts of equity, the more especially that, within the past year, 25 railway companies, whose aggregate share capital and debt exceed \$550,000,000, have gone into the hands of receivers.

Giffard, V. C., has said that the appointment of a receiver "is one of the oldest remedies" in equitable procedure. The praetors in Rome were accustomed to decree an *ad interim* possession of property *pendente lite*, and Mr. Spence has quoted from the records of the English Court of Chancery an order appointing a receiver as early as 1588.<sup>1</sup> Jessel, M. R., has said:<sup>2</sup> "A receiver is a term which was well known in the Court of Chancery as meaning a person who receives rents or other income, paying ascertained outgoings, but who does not, if I may say so, manage the property in the sense of buying or selling, or anything of that kind. \* \* \* If it was desired to continue the trade at all, it was necessary to appoint a manager, or a receiver and manager, as it was generally called." In the practice of the equity courts in this country, this distinction seems to have been disregarded, and the rule here is that a receiver exercises whatever powers of management may be designated in the order appointing him.<sup>3</sup> It was held in England in 1866 that the Court of Chancery could not, without statutory authority, undertake the management of a railway, Cairns, L. J., saying:<sup>4</sup> "When Parliament, acting for the public interest, authorizes the construction and maintenance of a railway, both as a highway for the public and as a road on which the company may themselves become carriers of passengers and goods, it confers powers and imposes duties and responsibilities of the largest and most important kind, yet it confers and imposes them upon the company which Parliament has before it, and upon no other body of persons. These powers must be executed and these duties discharged by the company. They cannot be delegated or transferred. \* \* \* It is impossible to suppose that the Court of Chancery can make itself or its officer, without any Parlia-

<sup>1</sup> Hopkins v. Canal Proprietors, L. R., 6 Eq. 447; Spence on Equitable Jurisdiction, 378, 673.

<sup>2</sup> In re Manchester & Milford Ry., L. R., 14 Ch. Div. 653.

<sup>3</sup> But in Langdon v. The Vt. & Can. R. R., 54 Vt., 605, Redfield, J., takes the same view as that quoted from Jessel, M. R.

<sup>4</sup> Gardner v. L. C. & D. Ry., L. R., 2 Ch., 201.



mentary authority, the hand to execute these powers, and all the more impossible when it is obvious that there can be no real and correlative responsibility for the consequences of any imperfect management." As the result of this decision the "Railway Companies Act 1867" was passed, the fourth section of which exempts from execution the plant and rolling stock of railways, but gives to judgment-creditors the right of obtaining from the Court of Chancery the appointment of a receiver, and, if necessary, of a manager of the undertaking of the company. In some of the United States statutes have been passed authorizing the appointment of railway receivers; but as Swayne, J., said, "in reference to such statutes, it is now generally assumed that there is 'no reason why a court of equity, in the exercise of its undoubted authority, may not accomplish all the best results intended to be secured by such legislation without its aid.'" While it is to be hoped that all railway receiverships are not justly liable to the censure which Miller, J., so forcibly expressed as to some receiverships, yet it is undoubtedly true, as that learned Judge says, that "the appointment of receivers as well as the power conferred on them and the duration of their office, has made a progress which, since it is wholly the work of courts of chancery and not of legislatures, may well suggest a pause for consideration." In this amplification of equitable jurisdiction the courts of the United States seem to have been influenced by the complex character of railway corporations as associations organized for purposes of private gain, and also as trustees of public functions." While it is true, as Harlan, J., has said, "that the disposition of the corporate officers, and the appointment of a receiver is 'a proceeding involving the exercise of the highest discretion, and embracing a very wide field of judicial investigation and inquiry,'" yet it is clear that where the necessary parties are before the court, and where it is proven, or admitted, that the preservation of the corpus of the corporate property, and the right appropriation of the corporate income require it, a court of equity should not hesitate to give this relief.<sup>10</sup> But the appointment of a receiver is a means, not an end. The court appoints him only because there is litigation as to property, and because it is essential to the preservation of that property that the court should take possession *pendente lite*.<sup>11</sup>

The recognized definition of a receiver is that quoted by Wayne, J., in these terms:<sup>12</sup> "A receiver is an indifferent person between parties appointed by the court to receive the rents, issues, or profits of land or other things in question in this court, pending the suit, where it does not seem reasonable to the court that either party should do it." A receiver's appointment is only a method of equitable execution, as Swayne, J., has said:<sup>13</sup> "Every kind of property of such a nature, that, if legal, it might be taken in execution, may, if equitable, be put into his possession." He is appointed for the benefit of all parties interested, and not for that of the applicants alone.<sup>14</sup> The property intrusted to him is in *custodia legis*, his possession is that of the court, does not derange the priority of legal or equitable liens,<sup>15</sup> and cannot be disturbed either by force or by legal process without the permission of the court appointing him, nor can he be sued in any other forum without that permission, even for damages inflicted in operating the road.<sup>16</sup> He is the executive officer of the court, and the "right arm" of its jurisdiction, and while he can be held to a legal responsibility, the court is morally responsible for his actions, and for his neglect to act. He has only such power as may be given him by the court. He must not exceed the prescribed limits of that power, and all who deal with him are bound to take notice of those limits. His receipts, including both principal and income, constitute a trust fund, and they can only be disbursed under the direction of the court in discharge of liabilities necessarily incurred in the administration of the trust, and in distribution among the parties equitably entitled to come upon the fund. The general rule is, as stated by Field, J.,<sup>17</sup> that "a receiver is not authorized, without the previous direction of the court, to incur any expenses on account of the property in his hands beyond what is absolutely essential to its preservation and use, as contemplated by his appointment." It is, of course, the duty of the court to pay from the fund all debts necessarily incurred by the court in its administration of the trust.<sup>18</sup> While it is true that the payment of debts for operating expenses incurred by the corporation before the receiver's appointment, stands, in the words of Blatchford, J.,<sup>19</sup> "*prima facie* on a different basis from the payment of claims arising under the receivership," yet such payments have been sanctioned only that the railway may continue to be a going concern, and, as that learned judge added, because they may be said "to preserve the mortgage property in a large sense by maintaining the goodwill and integrity of the enterprise." The assignee of such a debt has the same right as the original holder, and his priority will not be waived by the renewal at maturity of paper representing the debt.<sup>20</sup> It is on the other hand well settled, that a receiver will not be permitted to make payments from the fund to general creditors who have no special equity entitling them to priority;<sup>21</sup> but it is not in all cases easy to distinguish between general, and therefore unsecured, creditors, and those other creditors who, by virtue of their contribution to the gross income, are deemed to have acquired an equitable lien upon the fund. Nor will the receiver be permitted to appropriate the income of the trust to the payment of interest on mortgage bonds, and by reason of such payment to incur debt for the purchase of necessary rolling-stock.<sup>22</sup> The business of railways is, of necessity, done to a large extent upon credit, and the receiver, when put into possession, is generally met by pressing demands for the payment of debts due to material men and to laborers while the accruing income of the road is not always sufficient to discharge current expenses, without regard to fixed charges. The protection of the property may also require expenditure to purchase necessary rolling-stock, or to complete an unfinished road. It has been held that, under such circumstances, it is the duty of the court to authorize its receiver, not only

to appropriate the income of the trust to such purposes, but also to borrow money and to incur the property in his hands by the issue of certificates therefor, and the creation of a paramount lien as the security for such certificates. While—as Bradley, J., said<sup>23</sup>—the power to issue such certificates should "be exercised with great caution," yet it has been determined to be essential to the judicial administration of railway property that the courts should possess this power. Strong, J., has said,<sup>24</sup> that the power exists because of the "plain duty to preserve" the property in *custodia legis*, "not only for the benefit of the lien creditors, but also for the benefit of the company whose possession the court has displaced;" and Waite, C. J., has maintained it by more elaborate reasoning.<sup>25</sup> His view is that corporations are in equity admitted trustees for their several classes of creditors in their relative priorities; that mortgages out of possession have no lien on the gross income, the fund from which their interest is paid being the net income remaining after payment of operating expenses;<sup>26</sup> that the mortgages may enforce their rights by entry into possession, or by foreclosure, without appeal to the court for the exercise of its discretionary power of appointing a receiver, but that if they do invoke the exercise of equitable discretion, it is the duty of the court to so mold the decree that the corpus and the income of the fund shall be distributed among the parties equitably entitled and according to their equitable priorities, so that the gross income may pay those operating expenses which have produced that income, and so that betterments may be borne by the principal and not by the income.<sup>27</sup> Receivers have been authorized to issue certificates for the purpose of finishing a road, upon whose completion within a definite time was dependent a valuable land grant;<sup>28</sup> for repairs to the road, and for necessary rolling-stock; for balances due to connecting roads, and for pre-existing claims for labor and material.<sup>29</sup> It should, however, ever be borne in mind that "the court cannot by authorizing the receiver to create liens upon the property displace or impair the mortgages' rights of property, any more than the legislature can impair the obligation of a contract,"<sup>30</sup> that is to say, the court cannot, without the consent, express or implied, of prior incumbrancers, create new liens which would impair the vested rights of those prior incumbrancers. It has been held in England<sup>31</sup> that advances made by liquidators of a corporation, under the sanction of an order of court, will not be given priority of payment out of the corpus of the estate in preference to the claims of mortgages, James, L. J., saying: "It is said that the transaction was for the benefit of the debenture holders, and that if this property had been sold at that time, in all probability it would have sold badly, and therefore it was for their benefit that the works should be carried on; but then the debenture holders were the persons who had a right to express their opinion, whether the business should be carried on at their risk." \* \* \* "This agreement did not profess to bind, and it could not, in point of law, have bound persons who were not before the court."

In this country the priority of the lien of a mortgage, as an incumbrance upon a portion of the road built subsequent to the execution of the mortgage, has been sustained as against a contractor who built that part of the road under an agreement made between the company and himself, stipulating that he should retain possession, operate the road, and appropriate the net income to the payment of the cost of its construction.<sup>32</sup> The decision was put upon the ground that the registry of the mortgage was notice to all the world of the existence and extent of its lien, and that the rights of the bondholders could not be prejudiced by an agreement to which neither they nor their mortgage trustees were parties. In a later case<sup>33</sup> this doctrine was reaffirmed, Bradley, J., saying, the unsecured creditor's contention is that "his capital applied to the road conserved it and rendered it capable of being operated, which it would not have been otherwise; hence, on the principle adopted by the civil and maritime laws of awarding priority to the last creditor who furnished necessary repairs and supplies to a vessel, he is entitled to priority." \* \* \* "All that is necessary to say is, that the rule referred to has never been introduced into our law except in maritime cases, which stand on a particular reason." These authorities justify the conclusion that the bondholder's priority of lien cannot be disturbed, save with his express or implied consent, or with the express or implied consent of those who are authorized to act for him. But it is settled that the mortgage trustees represent the bondholders secured by the mortgages, and notices to those trustees will bind the bondholders.<sup>34</sup> Bradley, J., has said:<sup>35</sup> "The bondholders were represented by their trustees, and must be regarded as bound by their acts, at least so far as concerns the power of the court to act in making the order, and so far as the interests of other persons acting upon the faith of it might be affected." Receivers' certificates in the hands of bona fide purchasers for value cannot be subsequently questioned by bondholders whose mortgage trustees had notice of the application and did not oppose the issue of the certificates.<sup>36</sup> Blatchford, J., has said:<sup>37</sup> "A court of equity, however it may act on the question of original authority or discretion, if presented in season and under circumstances of good faith, will not visit upon innocent parties dealing with a receiver within the authority of its orders, consequences which result from the equitable negligence and supineness of a party to the suit, or of those represented by him."

While there is nothing, either in the adjudged cases or in the principles underlying them, which authorizes the issue of certificates to the prejudice of prior incumbrancers, for the purpose of paying either the interest upon or the principal of either floating debt or junior incumbrances, or indeed for any purpose not essential to the preservation of the property, which the court is administering, yet it is the clear result of the authorities, that the decree of the court authorizing the certificates is conclusive as to the propriety of their issue, and binding upon

all parties interested, who, having had, either actually or constructively, their day in court, have not objected. It is, therefore, suggested that enlightened selfishness requires mortgage trustees to act promptly in the protection of the interest of their bondholders, and, if necessary for that protection, to make timely opposition to the authorization of certificates, and that under such circumstances it would be well for bondholders to call upon their mortgage trustees to act, and, in default of such action, themselves to intervene in the suit, in which the receiver has been appointed, and thus acquire such a standing in court as will enable them to maintain the priority of their mortgage lien. Prudent investors in railway bonds have heretofore regarded as the chief element of insecurity the large amount of issues of bonds under particular mortgages and the consequent difficulty of obtaining, in case of foreclosure, combination of action on the part of the bondholders, and they have been accustomed to rely with confidence upon the priority of the lien of the mortgage securing their bonds. They should now realize that the doctrine of receivers' certificates has seriously affected the value of railway bonds, by requiring holders of such bonds to be vigilant, if they would maintain the priority of their mortgage lien.

Receivers' certificates do not import a general liability, for they are a charge upon a specific fund. They are, therefore, not negotiable, and the holder is bound to look to the terms of the order authorizing their issue, and he takes them subject to the equities between the original parties.<sup>38</sup> In the last cited case the receiver had hypothecated the certificates for a loan, and it was held that the certificates were not a lien to the amount of their face, but that the holder could recover upon them only to the extent of his actual money advances.

The English "Railway Companies Act," before referred to, provides that "where a company is unable to meet their engagements with their creditors, the directors may prepare a scheme of arrangement between the company and their creditors (with or without provisions for settling and defining any rights of shareholders of the company as among themselves, and for raising, if necessary, additional share and loan capital, or either of them), and may file the same in the Court of Chancery," and advertise the same in the *Gazette*, and that the scheme shall be deemed assented to by bondholders and shareholders when it shall have received the assent in writing of three-fourths in value of the holders of such bonds and shares. This simple and effectual provision may be worthy of legislative imitation in this country.

#### New York Railroad Commission Decisions.

In the matter of the complaint of R. F. Stevens, the Horton Ice Cream Co. and others against the New York, Lake Erie & Western Co., to the effect that the rates charged on milk to Jersey City are too high, the New York Railroad Commission has given a decision holding that no action can be taken in the case, as the railroad runs through New Jersey as well as New York, and the Board has no power to regulate inter-state commerce, authority over which is reserved by the Constitution to Congress. The decision concludes as follows:

"It is said, however, that this Board can recommend, even though the state has no power to enforce the recommendations."

"The Board is of opinion that where the state cannot interfere or legislate, the Board ought not to intrude recommendations which cannot be enforced."

"The power given to this Board to recommend is certainly not designed by the state to be used where the state has no power to act. Such force of public opinion as aids in compelling compliance with proper recommendations would be misdirected and invoked to aid in a trespass upon the domain of Congress."

"While believing in the correctness of its views as above expressed, the Board does not place its dismissal of these complaints as to milk rates solely upon the ground that this milk traffic is inter-state commerce, and that its regulation as proposed by the state is forbidden by the United States Constitution. There are other distinct grounds which seem to the Board to fully justify it in dismissing these complaints at the present time."

"The general subject of milk rates and the service connected therewith on the Erie road was thoroughly investigated by the Hepburn Committee, and its full report of the evidence and facts is of recent date. Their repetition would consume time and do no good. Again, when these complaints first came to the Board the Erie milk rate was 40 cents per 40-quart can. Since then it has reduced the rates to 27½ cents, or 33½ per cent., to meet the Harlem reduction made under the recommendation of this Board. This reduction has only been in force since January, 1884, and the Board thinks it but fair to permit the reduced rate to be thoroughly tested before further investigating the subject upon roads which have made the reduction. For the reasons stated the Board declines to entertain the complaints or to investigate or recommend as asked."

Commissioner O'Donnell dissents in a long argument, the conclusions which he reaches being as follows:

"The point raised by the road, of jurisdiction by the Board, should be overruled. The duty of the Board is to proceed with the investigation, leaving to the road its undoubted right to appeal to the courts to restrain any illegal action by the Board. The investigation by this Commission is not, in any sense, such a 'regulation of commerce' as is provided against by the Constitution of the United States."

"Inter-state commerce not having been defined by any act of Congress, and the exercise of the sovereign power of the state being necessary to protect its citizens against wrongdoing on the part of the corporations of the state, therefore the state may proceed to regulate or restrain such corporations in any wrongful action toward its citizens."

"This milk traffic over this road is a traffic not national in its character, nor between states or citizens of different states, but between citizens of the state of New York to and from points in the state of New York, and from the nature of the traffic is domestic commerce not subject or liable to any hostile legislation from the state of New Jersey."

"The fact that the Hepburn Committee investigated the milk question generally in 1879, is not a good ground upon which to dismiss these cases without investigation by the Board. This is a specific complaint some five years later than this report, and it might well happen that these complaints are not covered by the committee's report; and besides, the Legislature had this committee's report before them when they created the Railroad Commission, and devolved upon it the duty of this, with other similar investigations."

"That the rate for transporting milk has been reduced from 40 to 27½ cents per can since this investigation began, is *prima facie* evidence that the rate was too high and that the investigation by the Board was needed; it may turn out, upon further examination, that the rate is still too high."

<sup>38</sup> Union Trust Co. v. Chicago, 7 Fed. Rep. 513; Turner v. P. & S. Ry., 95 Ill. 134; Bank of Montreal v. C. C. & W. Ry., 7 Cent. Law Jour., 257; Swan v. Clarke, 110 U. S., 802.

5 L. R. Stat. 1867, Vol. II, part 2, page 1,332.

6 Davis v. Gray, 16 Wall., 203, 220.

7 In his dissenting opinion in Barton v. Barbour, 104 U. S., 137.

8 Barton v. Barbour, 104 U. S., 135; Miltenberger v. The Logansport Ry., 106 Id., 312.

9 Hammock v. The Loan & Trust Co., 105 U. S., 85.

10 Redfield on the Law of Railways, 396; Cheever v. Rutland & Burl. Ry., 39 Vt., 653; Langdon v. Vt. & Can. Ry., *ut supra*.

11 Kerr on Receivers, 134; High on Receivers, sec. 36; Taylor v. P. & R. R., 10 Weekly Notes, 554.

12 Quoted from Wyatt, Prac. Reg., 355, in Booth v. Clark, 17 How., 331.

13 Davis v. Gray, 16 Wall., 217.

14 Adams' Equity, 355; Daniel's Chan. Pr., 1715; Bispham's Eq., sec. 576.

15 Wiswall v. Sampson, 14 How., 52, 64.

16 Barton v. Barbour, *ut supra*.

17 Cowdrey v. G. H. & H. R. R., 93 U. S., 352.

18 Myer v. The Car Co., 102 U. S., 1, 13.

19 Miltenberger v. The Logansport Ry., 106 U. S., 311; Hale v. Frost, 99 Id., 389; Fosdick v. Schall, Id., 239. See, also, Union Trust Co. v. Southern, 107 Id., 591.

20 Burnham v. Bowen, 111 U. S., 776.

21 Fosdick v. Schall, 96 U. S., 231; Huidekoper v. Loco. Works, Id., 258; Burnham v. Bowen, *ut supra*.

22 Taylor v. P. & R. R., 10 Weekly Notes, 554.

23 Wallace v. Loomis, 97 U. S., 446, 163.

24 Jerome v. McCarter, 94 U. S., 734, 738.

25 Fosdick v. Schall, *ut supra*.

26 Galveston R. R. v. Cowdrey, 11 Wall., 459; Gilman v. I. & M. Tel. Co., 91 U. S., 617; Bridge Co. v. Heidelberg, 94 Id., 800; Chinnery v. Black, 3 Doug., 391.

27 See also the opinion of Waite, C. J., in Burnham v. Bowen, *ut supra*.

28 Jerome v. McCarter, *ut supra*; Kennedy v. L. & P. R. R., 2 Dillon, 448; Miltenberger v. Logansport Ry., *ut supra*; Stanton v. A. & C. R. R. Co., 2 Woods, 506.

29 Wallace v. Loomis, *ut supra*; Fosdick v. Schall, *ut supra*;

Fosdick v. Car Co., 99 U. S., 256; Hoover v. M. & G. L. Ry., 29 N. J. Eq., 4; Meyer v. Johnston, 53 Ala., 237; Gurney v. A. & G. W. Ry., 58 N. Y., 358; see order made June 17, 1884, by Bradley and Butler, JJ., in Kelsey v. P. & R. R. Co., C. C. U. S., E. D. Pa., Apl., 1884, No. 28.

30 Jones on Railroad Securities, sec. 542.

31 In re Regent Canal Iron Works, *ex parte* Grissell, L. R., 3 Ch. Div., 411, 420.

32 Dunham v. Railway Co., 1 Wall., 254.

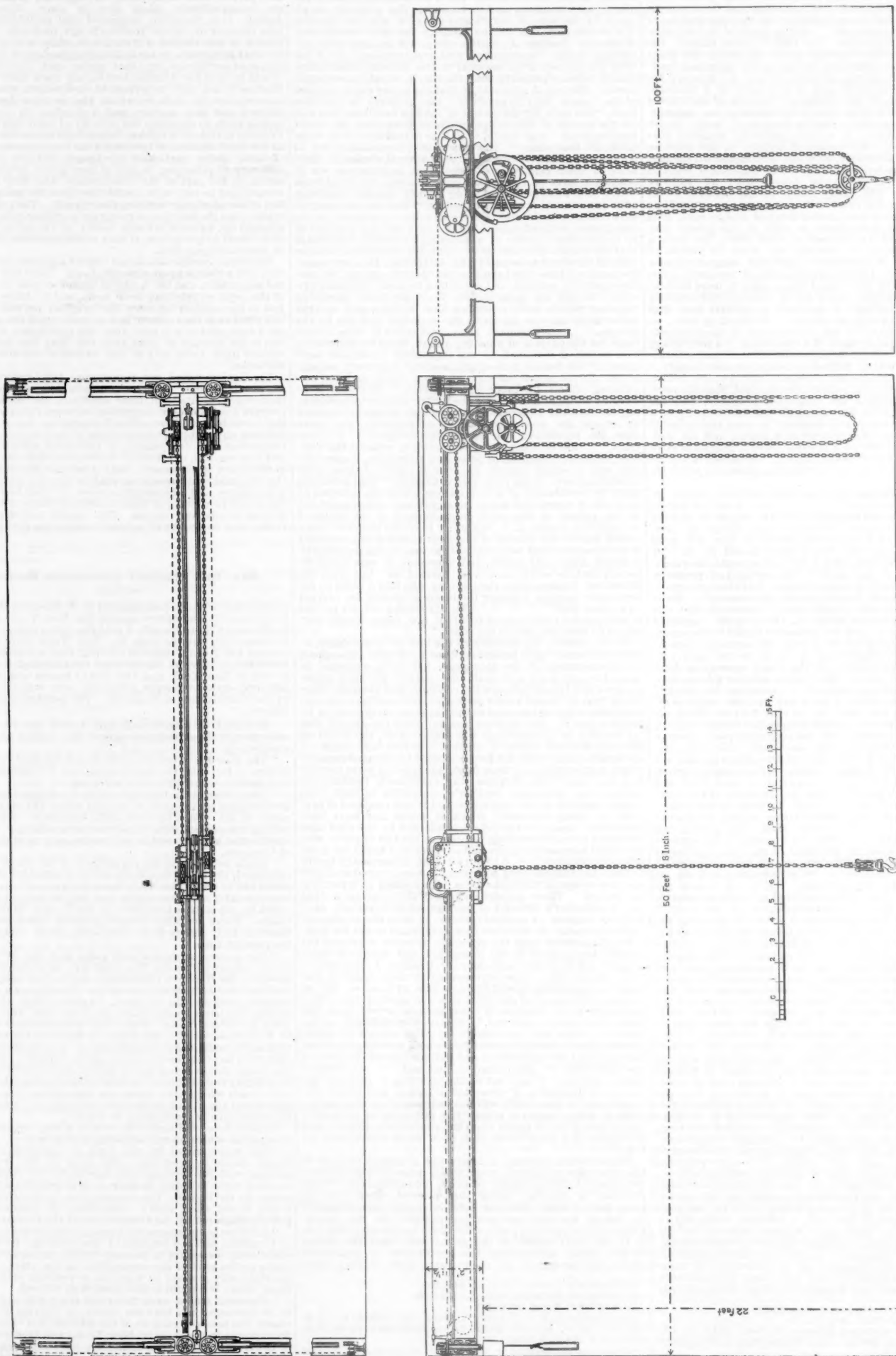
33 Galveston R. R. v. Cowdrey, 11 Id., 459.

34 Corcoran v. Chesapeake Canal Co., 94 U. S., 741; Kerrison v. Stewart, 93 Id., 160.

35 Wallace v. Loomis, 97 U. S., 163.

36 Humphreys v. Allen, 4 Am. & Eng. R. R. Cases, 14; Langdon v. Vt. & Can. R. R. Co., Id., 33; Miltenberger v. Logansport Ry., *ut supra*.

37 In the last cited case, 106 U. S., 308.



SIX-TON HAND TRAVELING CRANE.  
Made by YALE & TOWNE MANUFACTURING CO.

But in any event no such consideration should have weight in the decision of the case until after due investigation by this Board."

## Cranes.

### II.

In continuation of a previous article,\* describing some of the varieties of hand power jib cranes made by the Yale & Towne Manufacturing Co., of Stamford, Conn., we now illustrate and describe some of the forms of hand-power traveling cranes made by the same company.

*Six-Ton Hand Traveling Crane.*—This illustration shows

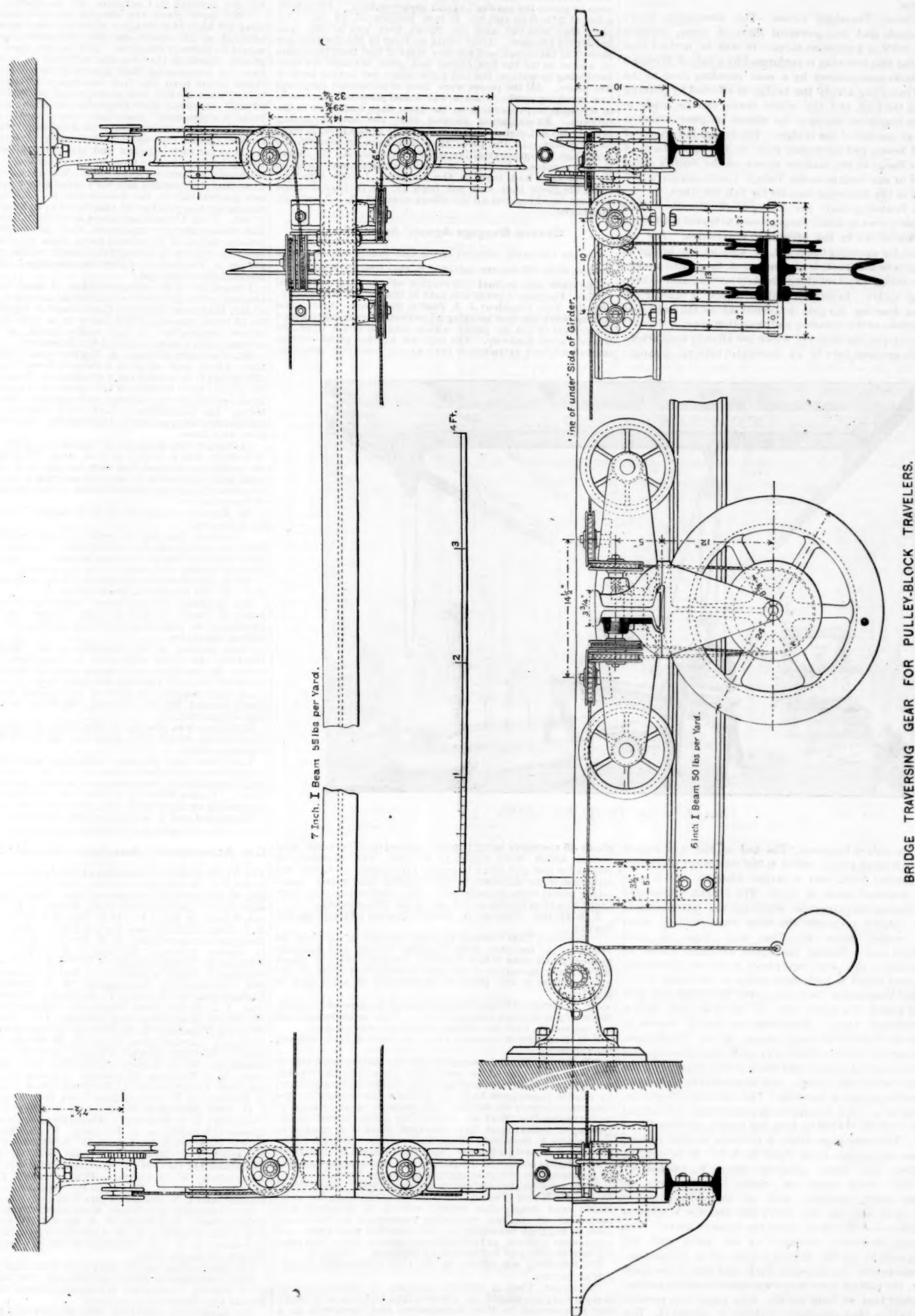
the general arrangement of a hand-power traveling crane, the plan being shown above the end and side elevations. The traveling, traversing and hoisting gear is attached to the right-hand end of the bridge of the crane, and is therefore actuated by men standing near the wall of the shop, and not necessarily near the article to be lifted or lowered. In many kinds of work this is a great convenience. As nothing projects much above the upper side of the bridge, it can be placed very near the roof of the shop, and thus give plenty of space beneath. The trolley travels on tracks on the top of the bridge, and its sides extend downward close to the bridge with the chain sheaves contained between them. It will be noticed that the endless hoisting chain passes from the crab at the end of the bridge (where the chain is gripped,) along

one side of the bridge, then over a chain sheave or pulley, down to the block provided with a hook, to which the load is slung, and thence up to a sheave on the other side of the trolley, along the further side of the bridge (where its course is shown in dotted lines), to a sheave on the left-hand side of the bridge, and thence back to the crab. This last part of the chain is shown in the plan.

It is most important that a traveling crane should be kept square upon the tracks, and as the span is large in proportion to the wheel-base of the wheels carrying the bridge, this has generally been found very difficult to accomplish successfully. It is obvious, that if the bridge is not always at right-angles to the tracks, the flanges of the wheels will jam against the sides of the rails, and the consequent fric-

\* See Railroad Gazette of Feb. 29, 1884.





tion will render it almost impossible to travel the bridge. This difficulty has been overcome in a most ingenious manner in the cranes under notice. The bridge is thereby propelled at the same speed at both ends, so that when a load is being lifted at one end, the tendency of that end to lag behind and let the other end get ahead of it is effectually counteracted. Traveling cranes as hitherto made have been traveled by causing the carrying wheels to revolve, and thus propelling the crane by the adhesion of the wheels to the rails. But this plan, if applied to the wheels at both ends of the bridge, involves long shafts for the purpose of coupling the wheels. These shafts are liable to torsion, and therefore the end of the bridge where the power is applied, moves first and gets

ahead of the other end and thus the crane is jammed across the track.

The Yale & Towne cranes are traveled and kept square by two small wire ropes which are secured and kept taut at the ends of the shop by a simple automatic arrangement. The cranes are made to travel by hauling on these ropes by means of gripping wheels. The arrangement insures the bridge being perfectly square under all circumstances. Though the power be applied at one end only of the bridge, the force to move the bridge is equally divided between the two ends. The arrangement is more clearly shown and will be better understood by a reference to the illustration of the pulley block traveler which will be described further on.

The trolley is not fitted with separate traversing gear, this motion being effected by the hoisting gear in a similar manner to that used on the double frame jib crane already described. The traversing is effected by lowering on one end of the hoisting chain, and lifting on the other end to the same amount. The load then remains stationary, but the trolley tends to traverse. A brake is fitted on the sheaves of the trolley to restrain their revolving, and thus insure the hoisting chain traversing the trolley.

In the side elevation of the crane, the hand chains for quick and slow motions in hoisting and lowering are shown on either side of the centre hand chain, which latter actuates the travelling gear moving the bridge up and down the shop. The handle shown actuates the trolley locking gear,



which is applied, as before explained, to compel the trolley to traverse.

**Pulley-block Traveling Crane.**—This illustration shows a more simple and less powerful form of crane, suitable for light work in a machine shop. It will be noticed that the hoisting and lowering is performed by a pair of Weston's pulley blocks manipulated by a man standing close to the load. Traversing across the bridge is effected by pushing or pulling the load, and the whole crane can be made to travel the length of the shop by means of gear which is situated at one end of the bridge. The bridge is formed of a single I beam, and the trolley runs on the upper faces of the lower flange in the manner shown on the smith's crane described in our article on the Yale & Towne cranes which appeared in the *Railroad Gazette* for Feb. 29, 1884.

**Bridge Traveling Gear for Pulley-block Traveler.**—This illustration shows in detail the gear used to travel the bridge of the crane shown in the preceding illustration. The arrangement for squaring the crane, or keeping the bridge at right angles to the track, is also indicated, the means used to cause the bridge to travel along the shop serving also to keep the bridge square. In our illustration, which is taken from a working drawing, the plan is placed above the side and end elevations of the squaring and traveling gear.

The wire ropes, the object of which has already been briefly explained, are kept taut by an automatic take-up arrange-

Baldwin people becoming convinced that case-hardened pins were unreliable; they determined to make some systematic tests to prove the matter beyond peradventure. They took a bar of 2-in. iron and cut it into lengths of 12 in. One piece they kept out and the others they put in the case-hardening furnace. After being an hour in the furnace one piece was taken out, and another after it had been two hours in, and so on till the five pieces had gone through the case-hardening operation, the last piece taken out having been in five hours. All the pieces were then in succession subjected to a breaking strain, when it was found they had decreased in strength in proportion to the time they had been in the furnace. Examination showed that the case-hardening process did not merely affect the outside of the iron, it went to the centre. In the piece that had been in longest, the heart had become crystalline, and very coarse. All the others showed similar indications in smaller degrees according to the time they had been in the furnace. In the breaking tests, the piece that had not been in the furnace doubled without breaking, but all the others snapped off. —*American Machinist.*

#### General Baggage Agents' Association.

For the following account of the half-yearly convention in Boston, July 16, we are indebted to the *Official Guide*:

The sixth semi-annual convention of the Association of General Baggage Agents was held in Boston on Wednesday, July 16, Vice-President J. J. Post in the chair. After some routine work the first meeting adjourned till evening to await the arrival of a large party which was en route over the Grand Trunk Railway. The roll-call at the night session showed a larger attendance than at any previous meeting,

The Committee appointed at the last meeting on the question of checking baggage on borrowed tickets reported as follows, through its Chairman, Mr. McWade:

"We have given the subject careful consideration, but have not been able to agree upon any plan which would be adapted to all conditions and circumstances, and which would be entirely effective. As a means, however, of very greatly checking the practice referred to, your Committee have to recommend that agents be instructed to refuse to check more than the free allowance of baggage for one ticket, when several tickets are presented by the same individual, exercising their judgment and discretion as to when fraud is attempted. Also, that, where agents have reason to believe that persons do not own baggage for which they request checks, they shall require such persons to produce the keys for such baggage and identify contents, otherwise, to absolutely refuse to issue the checks asked for. This rule is already in force on some lines. We are advised, in every case, that the results are very satisfactory, and if adopted as a general rule by the Association, we believe it would so discourage the practice of this fraud as to practically stamp it out. Your Committee would here like to state that they find, from extensive experience, that the 1,000-mile coupon passage ticket, in its present form, is an excellent ticket to assist its holders in committing frauds on the railroad companies in the matter of checking baggage. All of which is respectfully submitted."

The subject of the transportation of dead bodies, and attendant evils, received considerable attention. On motion of Mr. MARSTON (Chicago, Rock Island & Pacific), a committee of seven was appointed to report a plan by which the proper preparation of such bodies could, in all cases, be secured before being received for shipment.

Mr. PHILLIPS (Chicago & Northwestern) offered a resolution, which was adopted without a dissenting voice, to the effect that it be considered a question of honor and duty on the part of each member of the Association to return promptly all special checks received on baggage to the lines owning them. The Committee on Lost Check Receipts, appointed at the last meeting, reported, through its Chairman, Mr. Marston, as follows:

"Owing to the diversity of opinion as to the exact form of receipts which would be both most effective and legal, we would recommend that each line use such form as may seem best adapted to its purpose, providing that such receipt requires not only an identification of the baggage, but also of the passenger."

Mr. FREEMAN (Lake Shore & Michigan Southern) offered the following:

"Resolved, That it is the sense of this meeting that the best way to indicate the destination of baggage on a check card is by writing or printing the name in full of such destination on the card, rather than the number."

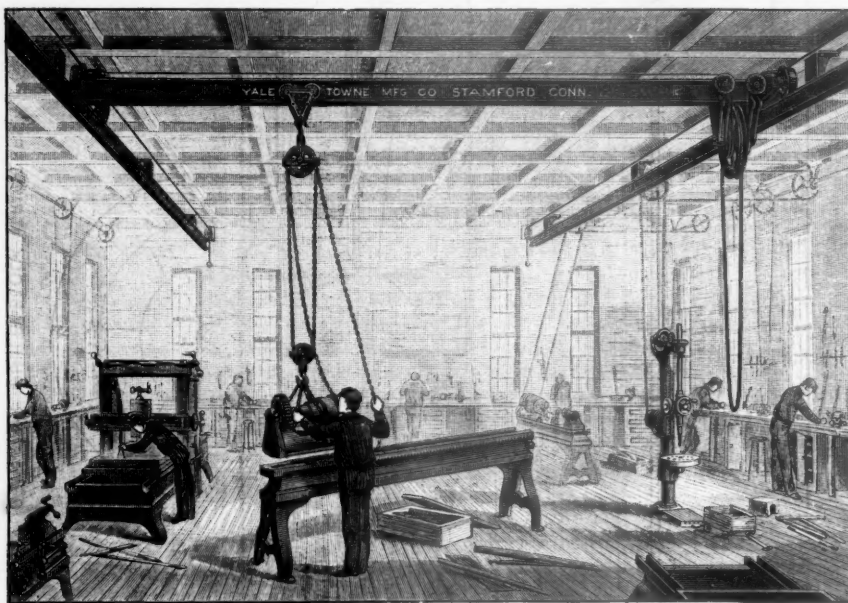
After considerable discussion of the merits of the two methods, the resolution was adopted.

Mr. BENTLEY (Pennsylvania Company) presented a new form of check, devised by Mr. Cooper, of the Missouri Pacific, to the Convention, and on motion the matter was laid on the table.

Upon motion of Mr. DEARING, of the Michigan Central Railroad, the Chair appointed a committee of three to examine the various local excess baggage tariffs in use, and report at the next meeting the one possessing the most merit in all respects, with a view to its general adoption. The Chair named Messrs. Dearing, McWade and Winters as such committee.

Baltimore was chosen as the place for holding the next Convention, which will meet on the third Wednesday in January, 1885.

The profit and pleasure attendant upon the meeting at Boston were materially enhanced by the excellent work of the Committee of Arrangements, Messrs. Morton, Pease and Towle. Under their supervision the Association, after adjournment on the second day, were given a delightful sail to Nantasket and a banquet at the Nantasket Beach Hotel.



PULLEY-BLOCK TRAVELING CRANE.

ment at the ends of the shop. The end of the wire rope is secured to a small pulley, which is fast on a short shaft, carrying a ratchet wheel and a larger wheel to which is attached a weighted chain or cord. The weight continually tends to tighten the wire rope, whenever the latter is slack, and the ratchet prevents the wire rope yielding when a pull comes upon it. The wire rope is thus always kept taut. Taking the upper left-hand corner of our illustration, the wire rope passes from the tightening arrangement round a horizontal pulley on the truck carrying the left-hand end of the bridge, over the bridge and over a vertical pulley to a pulley fast on the same shaft with a large hand-rope wheel. The latter is clearly shown in section in the right-hand lower corner of our illustration. Still tracing the course of the wire rope, it rises, passing over a vertical sheave to a horizontal guide pulley situated on the right-hand end of the bridge, and thence to the right-hand side of the lower end of the shop. The wire rope, therefore, terminates at a point diagonally opposite to the point from which it started, traveling both the length and breadth of the shop. The other rope takes a precisely similar course, but crosses the bridge from right to left. It is obvious that when the large grooved wheel is rotated by pulling the hand rope or chain, the pulleys on the same shaft revolve, and as the wire rope is taut, the grip between the wire ropes and the V grooves of the pulleys is sufficient to cause the crane to travel. The wire, being stationary, answers to the rails, and the revolving pulleys to the driving-wheels of a locomotive. As the pulleys are on the same shaft and are of the same diameter, the pull on each wire rope must be sensibly alike. It is evident that as long as the wire ropes run parallel with the bridge, they can exert no strain to propel it. But when their course is changed by the horizontal guiding pulleys at the ends of the bridge, it is evident that each wire rope exerts an equal force at each end of the bridge, tending to move it longitudinally along the shop. The forces tending to retard this movement are the tension of the relatively slack side of the wire ropes, but as these strains are also equal, the crane is acted on by equal forces at each end, and therefore has no tendency to get out of square with the rails on which it travels.

#### Effect of Case-Hardening on Iron.

Among some master mechanics and locomotive builders there exists a strong prejudice in favor of using case-hardened pins, yet pins of this kind fail oftener than any other part of a first-class locomotive. Some time ago the

about 45 members being present, exclusive of several new names which were added to the list. The discussion of claims for lost and stray baggage principally occupied the attention of the members at this session, and many interesting points were brought out. The convention met pursuant to adjournment at 9 a. m. on the following day.

J. E. QUICK (Chicago & Grand Trunk) offered the following:

"Resolved, That General Baggage Agents of all lines be requested to instruct their baggage agents and baggage masters in all cases when checking baggage with a check tag to mark the name of the state immediately after or below the name of the place of destination on said card or tag."

Mr. WINTERS (Illinois Central) moved to amend to make this apply to foreign baggage only. This amendment was not agreed to, and the original resolution was adopted.

F. E. NETTLETON (Kansas City, Ft. Scott & Gulf) offered the following:

"Resolved, That passengers, for the better security of baggage, be requested to mark each piece with their name and place of residence, giving town, county and state; that, to enable passengers to do so without inconvenience, the companies supply all stations with suitable cards or tags, to be furnished free; that all advertising matter issued by the passenger department have inserted therein a request to passengers to the above effect, and calling attention to the additional security afforded; that each station be furnished with suitable notices to the public, and that baggage agents be instructed to call passengers' attention to them."

After considerable discussion an amendment was offered by Mr. McWADE (Pennsylvania Railroad) to make the resolution read simply that suitable notices be prepared and posted at all stations requesting passengers to have each piece of baggage belonging to them marked with name and permanent address, as furnishing important aid in the tracing and recovery of lost and stray baggage. Adopted.

The following was offered by Mr. COX (Cincinnati, Hamilton & Dayton):

"Resolved, That a uniform amount of commercial or sample baggage should be allowed free by each and every line represented in this Association, and inasmuch as a number of lines are granting permits for 200 and 300 pounds commercial baggage free:

"Resolved, That it is the sense of this Convention that 200 pounds commercial baggage be made the uniform free allowance of baggage on one full first-class ticket, and that one ticket only be honored in checking commercial baggage regardless of the number presented by passenger:

"Resolved, That the Secretary of this Association be and is hereby instructed to present a copy of these resolutions to the General Passenger Agents for their approval, with the recommendation that the same be adopted by them in convention."

The discussion on these resolutions developed a disposition to curtail rather than extend the privileges granted to commercial travelers, and the resolutions were voted down.

Mr. VAN SMITH (Baltimore & Ohio) presented to the convention the new baggage check of G. W. Smith, General Passenger Agent Lake Erie & Western Railroad, but as many members were not familiar with the check, on motion its consideration was laid over until the next meeting.

#### Car Accountants' Association—Annual Convention.

The Ninth Annual Convention of this body was held at Richmond, Va., in May last, and we give below a condensation of the official report of the proceedings. Some eighty members were present, among them being Messrs. A. F. Wilder (Atchison, Topeka & Santa Fe), D. F. Maroney (Baltimore & Ohio), M. D. Seipt (Buffalo, New York & Philadelphia), W. H. Alport (Canada Southern Line), H. H. Lyon (Chicago & Alton), E. G. Squire (Chicago, Burlington & Quincy), F. M. Luce (Chicago & Northwestern), I. O. Parker (Cincinnati, New Orleans & Texas Pacific), C. I. Fellows (Cleveland, Columbus, Cincinnati & Indianapolis), R. T. Renney (Delaware, Lackawanna & Western), C. H. Ewing (Delaware & Hudson), F. J. Hoyle (East Tennessee, Virginia & Georgia), D. W. Moore (Grand Rapids & Indiana), C. O. Gwatkin (Great Western Dispatch), E. M. Horton (Illinois Central), C. W. Cushman (Lackawanna Line), G. H. Weeks (Lake Shore), Asa P. Blakslee (Lehigh Valley), E. L. Hill (Louisville & Nashville), W. S. Rogers (Louisville, New Albany & Chicago), G. F. Bingham (Merchants' Dispatch Line), I. W. Carter (New York Central), C. K. Cooke (New York, Lake Erie & Western), D. W. Powell (New York, West Shore & Buffalo), I. H. Cook (Norfolk & Western), E. Yardley (Pennsylvania Company), I. A. Keesberry (Pennsylvania Railroad), A. I. Speese (Philadelphia & Reading), H. N. Eastman (Pittsburg, Cincinnati & St. Louis), W. A. Moody (Richmond & Danville), I. L. Baulch (St. Louis Bridge), H. R. Payne (Standard Oil Co.), W. T. Spalding (Southern Car Tracing Association), W. H. Grayson (Union Line), H. G. Sleight (Vandalia Line), C. P. Chesboro (Wabash, St. Louis & Pacific), and I. N. Balme (White Line).

The following gentlemen were elected officers for the ensuing year: President, W. A. Moody (Richmond & Danville); Vice-President, F. M. Luce (Chicago & Northwestern); Secretary, H. H. Lyon (Chicago & Alton); Treasurer, H. G. Sleight (Vandalia Line).

The constitution and by-laws were then read and adopted. The Committee on Marking Railroad Cars then presented their report, containing recommendations made to the Master Car Builders' Association.

[An illustrated report on this subject will be found on page 426 of the *Railroad Gazette* for June 6, 1884.]

A discussion was then opened on various topics.

#### INTERCHANGE JUNCTION REPORTS.

1. Inasmuch as the Interchange Junction Reports have proved to be of great service since their adoption at Louisville, in 1880, is it desirable, in order to make them still more serviceable, to give the destinations of cars on these reports?

Mr. EASTMAN: It is not necessary to give the destination upon junction reports, as the labor would be very great. Our transfer reports show all cars leaving our line. Where one of our cars was delivered from one road to another, and was gone a long time, this would be of advantage to us; but, on the whole, it is unnecessary.

Mr. SLEIGHT: We do not want to know the destination, but where our cars are, and all we ask is the name of the road to which you deliver the car.

Mr. CUSEMAN: I have one man engaged entirely on New York Central junction reports, and to attempt to give the



destination would take several more. It is not worth the additional expense.

Mr. POWELL: The additional information (the destination) would not improve the service. Where a car had been gone a long while, it would be of service in getting the car home, but, on the whole, the information is unnecessary.

Mr. LYON: It is unnecessary. We want to get junction reports from all the roads in the country.

Mr. SPEESE: If we add much more to the junction report we will break this system up. We want simply to know that the cars passed to a different road, and with this information we can get the cars returned with as much speed as though we knew the destination; and I move that it is not necessary to give the destination of cars upon the junction reports.

Adopted.  
2. Should not these reports be made and forwarded as soon as transfer reports are received, and not detained for verification?

Mr. SLEIGHT: It is customary to make reports at once, and not detain them for verification.

Mr. EASTMAN: Our reports are not held for verification, but are often returned for correction.

Mr. KEESBERRY: I would rather have a prompt report with a few errors, than wait 48 hours longer. I move that the Interchange Junction Reports should be made out and forwarded as soon as possible after the transfer reports are received, and not detained for verification; and that in order to prevent delay and loss in their transmission, that they be made out on postal card form and forwarded by United States mail, instead of by train service. Adopted.

Mr. SLEIGHT moved that, when practicable, but one date of cars delivered to a foreign road shall appear on a junction card.

Mr. DAVIES: If there are two dates on one card, there is trouble in filing.

Mr. POWELL and Mr. SQUIRE saw no objection to two dates on one card.

Mr. BLAKESLEE and Mr. MOOR thought it advisable to have but one date.

Mr. HOYLE thought the earlier dates might be placed at the top of the card.

Mr. KEESBERRY: Our reports are made out as soon as the transfers are received, without regard to anything following; therefore late reports would be on separate cards.

Mr. Sleigh's resolution was adopted.

4. Is it not considered feasible to assign numbers to all roads, to be used on these reports and to be entered on our records, thereby dispensing with the use of initials?

Mr. MOOR moved, That Mr. A. W. Davies, of the N. Y., P. & O., be appointed a committee to assign numbers to all roads, or systems of roads, to be used on the junction reports instead of the initials of the road; and for time spent in doing it, he be compensated by this Association.

Mr. DAVIES: Experience in the use of junction reports shows that errors occur in the initials, and time is lost in making them. As proposed, a whole system will have one number, and there is no danger of getting wrong initials, misplaced initials, or a mistake in any way, except the whole thing be wrong.

Mr. PAYNE had used this system for many years.

Mr. SQUIRE thought it impracticable.

After some discussion Mr. DAVIES suggested that the roads be numbered by belts, giving the outside belts the high numbers, and the central the low, as they will be the most used.

Mr. MARONEY moved that a committee of five be appointed to prepare a plan for numbering the railroads in the United States and Canada, and report the same at the next meeting of the Association.

Adopted.

After some discussion Mr. Spalding's resolution as under was adopted:

"Resolved, That it is important to have switch cars included in these junction reports, but it is not essential to have them specified as such only when roads find it necessary to make this distinction."

Mr. SPEESE moved that uniformity in size, and standard form as adopted, be strictly adhered to, and be printed on the back of our printed proceedings.

Adopted.

Mr. HOYLE moved that a record of switched cars be kept, and that they be reported.

Adopted.

#### TRACING FOR CARS.

1. In order that car tracers may be more effective, would it not be advisable to use a tracer containing but one car number, said tracer to be sent only for such cars as have passed beyond two or more roads from home, and in all cases follow the car until it returns to owner?

Mr. SLEIGHT: The coupon tracer is the best for tracing one car. The coupons are returned promptly, and you know where the car is exactly.

Mr. SQUIRE disapproved of the coupon tracer: you should not trace one car at a time, but should put all your cars on one sheet.

Mr. SPALDING: A large tracer is best for a large road, and vice versa.

Mr. KEESBERRY preferred the old-fashioned tracer.

Mr. DAVIES: The single tracer is the best for tracing cars on foreign roads.

Mr. HOYLE moved that tracing is largely controlled by circumstances, and the object is to secure the return of cars; and that the ordinary tracer in common use answers the purpose, and that it be retained.

Adopted.

After some discussion Mr. KEESBERRY moved that upon receipt of a tracer the very latest account should be noted thereon and the tracer returned promptly, and a memorandum taken of all cars still upon the line, and prompt action taken to secure the return of the car.

Adopted.

3. Is it advisable when tracing for cars on foreign roads to be governed by the destination of the car, allowing it time to reach destination, be unloaded, and returned before tracing?

Mr. SPEESE thought that self-evident.

Mr. KEESBERRY: We do not trace at the present time to any road for any car (unless it is something we want specially) until fifteen days after the delivery of the car to the road to which our record shows it delivered. Every day our man makes up a statement of each and every car that is delayed ten days. We include cars that have left your line as well as cars that are still on your line. I take that off in order that I may find the detention on these several lines, including cars that are already off your lines. These tracers are sent out daily, and they cover only such as have been delayed that length of time. It requires twenty-four hours to enter up the information from our own transfer reports after they reach the office; and it takes three days to enter them in the record and cover any delay there may be in receiving these reports. In addition, we allow five days for the junction reports of all roads to reach us before we begin to take off the delayed cars, or five days from the date of the transfer reports. There are fifteen days allowed from the date on which we make up our statement. We would not trace to a foreign

road for a car unless we wanted it. When we do not want a car we are not going to trace for it.

The following resolution was then adopted:

"Resolved, That it is feasible and desirable when tracing for cars on foreign roads to be governed by the destination of the car, to allow it time to reach its destination, be unloaded and returned, before tracing for it."

[TO BE CONTINUED.]

#### Destroying Weeds by Steam.

The Chicago, Burlington & Quincy Co. is testing an arrangement for destroying weeds adjoining the track. It has been fitted on an engine at the Aurora shops, and consists of two iron pipes projecting on each side of the engine in front. The exhaust steam is conducted into these pipes instead of through the smoke-stack, and the steam and gas are thereby thrown out close to the track in front of the engine on each side. On a trial trip weeds and grass were cut down and destroyed some 2 ft. on each side of the rails. It is proposed to run an engine over the entire road in this way.

#### ANNUAL REPORTS.

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#### Chicago & Eastern Illinois.

A statement published by this company in connection with the issue of its consolidated bonds says that the present bonded debt is \$4,500,000. The new issue is \$6,000,000, of which \$4,500,000 are reserved to exchange for other issues, leaving \$1,500,000 in the treasury.

The assets held to retire floating debt are:

First consolidated bonds, as above.....	\$1,500,000
Income bonds in treasury exchangeable into consolidated bonds.....	231,000
Strawn & Indiana State Line first mortgage.....	150,000
Evansville, Terre Haute & Chicago 6s.....	15,000
Cash (June 11).....	81,867
Total.....	\$1,977,867

The total floating debt, including car-trust and equipment notes maturing at various dates up to July, 1887, is now \$1,087,000.

The earnings for the year ending June 30 were as follows:

	1883-84.	1882-83.	Decrease.	P. e.
Earnings.....	\$1,562,870	\$1,759,132	\$196,262	11.2
Expenses.....	845,024	989,941	144,917	14.6

Net earnings.....	\$717,846	\$770,191	\$52,345	6.8
Gross earn. per mile.....	6,202	6,581	379	11.2
Net.....	2,849	3,056	207	6.8
Per cent. of exps.....	54.07	56.22	2.15	

The fixed charges (interest and rentals) for the year were \$524,203, leaving a surplus of \$193,643, against \$292,886 for the preceding year.

#### Chicago & Northwestern.

At the close of its twenty-fifth fiscal year, May 31, 1884, this company operated 3,763.25 miles of road, the statement of mileage by divisions being as follows:

	Miles.
Wisconsin Division, Chicago to Ft. Howard, and branches.....	555.29
Galena Division, Chicago to Clinton, and branches.....	325.98
Iowa Division, Clinton to Council Bluffs, and branches.....	579.49
Northern Iowa Division, Tama to Elmora, and branches.....	339.81
Madison Division, Belvidere to Winona, and branches.....	467.47
Peninsula Division, Ft. Howard to Lake Angelina Mine, and branches.....	376.38
Winona & St. Peter Division, Winona to Watertown, and branches.....	448.48
Dakota Division, Minnesota line to Pierre, and branch.....	542.38
Total mileage worked.....	3,763.25

Of this mileage 3,113.96 miles are laid with steel, leaving 649.29 miles of main track still laid with iron rails.

Additions during the year were 179.15 miles, as noted more in detail below. The average mileage worked for the year was 3,719.53 miles, against 3,464.70 miles for the preceding year.

Of the total mileage 1,718.45 miles are owned by the company directly, 1,499.84 miles owned through the proprietary companies, and 544.96 miles are leased. Of the whole line 510.50 miles are in Illinois; 904.85 in Wisconsin; 308.49 in Michigan; 1,048.08 in Iowa; 414.47 in Minnesota, and 576.86 miles in Dakota.

The equipment at the close of the last two years was as follows:

	1884.	1883.	Inc. or Dec.
Locomotives.....	639	578	I. 61
Passenger cars, first-class.....	247	244	I. 3
second-class.....	39	39	
Parlor and dining cars.....	16	13	I. 3
Baggage, mail and express cars.....	147	128	I. 19
Total passenger train cars.....	449	424	I. 25
Box cars.....	11,668	10,143	I. 1,525
Stock cars.....	1,922	1,435	I. 487
Platform and gondola cars.....	2,653	2,654	D. 1
Iron ore cars.....	3,857	3,857	
Caboose cars.....	320	282	I. 38
Total freight cars.....	20,420	18,371	I. 2,049
Paymasters' and officers' cars.....	6	5	I. 1
Boarding cars.....	18	18	
File-driving and wrecking cars.....	26	24	I. 2
Dump and ditching cars.....	65	65	
Total service cars.....	115	112	I. 3

The increase in motive power is the largest for a number of years.

The Land Commissioner reports that the sales of lands during the year amounted to 140,076 acres, and 1,573 town lots, for the total consideration of \$734,757. The cash receipts from sales, annual collections on contracts, interest, etc., were \$706,785. The number of acres now under contracts of sale is 390,087, and amount of land unsold remaining in all the grants is 1,456,149 acres. Total number of acres unconveyed, including lands under contracts of sale, upon which partial payments have been made, and of lands unsold, is 1,846,235 acres. Receipts derived from sales of lands and lots are not embraced in the net earnings of the railroad, but are placed to the credit of land income account in the general balance sheet of the company.

The general account at the close of the year was as follows:

	Liabilities:
Capital Stock:	
Common stock and scrip Chicago & Northwestern Railway.....	\$26,617,365.97
Preferred stock and scrip Chi. & N. W. R.....	23,325,454.56
Chi. & N. W. common stock acquired by consolidations in 1883.....	9,765,100.00
Consolidation Coal Co.....	200,000.00
Dakota Central.....	250,000.00
Freeport & Mississippi River.....	25,000.00
Iowa Midland.....	50,000.00
Iowa Railway, Coal & Manufacturing Co.....	60,000.00
Iowa Southwestern.....	1,500,000.00
Ottumwa, Cedar Falls & St. Paul.....	25,000.00
Princeton & Western.....	2,500.00
Stanwood & Tipton.....	5,000.00
Sycamore, Cortland & Chicago.....	40,000.00
Tol. & Northwestern.....	8,302,500.00
Winona & St. Peter.....	2,300,000.00
Western Town Lot Co.....	25,000.00
Total bonded indebtedness.....	\$71,492,920.53
Sinking funds paid.....	80,891,000.00
General consolidated gold bonds unsold.....	\$160,000.00
Aurora Branch first mortgage bonds unsold.....	150,000.00
Notes of Consolidation Coal Co. for coal lands, maturing in 1891.....	275,000.00
	\$585,000.00
Operating Liabilities:	
Material, fuel and steel rail bills for May.....	\$1,029,540.50
Current pay rolls.....	850,776.70
Unpresented coupons, old dividends, &c.....	80,651.23
Accrued interest, not yet due.....	675,395.00
Dividends declared, not yet due.....	1,027,772.00
Accrued rental of roads in Iowa, not yet due.....	562,543.23
	4,226,678.66
Income Balances:	
Railroad income account surplus.....	9,187,119.93
Land income account.....	\$1,348,675.32
Land income account, canceled bonds.....	860,000.00
Land income account, live bonds.....	730,000.00
	2,938,675.32
Total.....	\$171,051,394.44
Assets:	
Road and equipment.....	\$142,197,341.65
Trustees of sinking funds.....	1,730,000.00
General Assets:	
General consolidated gold bonds on hand.....	\$160,000.00
Consolidated sinking fund currency bonds on hand.....	12,000.00
Aurora Branch first-mortgage bonds on hand.....	150,000.00
Land grant investments.....	730,000.00
Cost of securities of proprietary companies.....	186,026.55
Cost of 147,000 shs. C. St. P. M. & O. stock.....	10,315,659.90
Common stock in hands of treasurer.....	10,006,348.86
Preferred stock in hands of treasurer.....	1,334.56
Outside real estate in Chic go.....	200,000.00
	21,761,360.87
Operating Assets:	
Materials and fuel.....	\$2,205,358.96
Bills and accounts receivable.....	1,192,626.12
Cash.....	1,904,698.14
	5,302,683.22
Total.....	\$171,051,394.44

The substance of this balance sheet, deducting items which appear on both sides above, and others which are chiefly matters of book-keeping, is given as follows:

	Property:
Cost of road and equipment.....	\$142,197,341.65
Cost of securities of sundry proprietary companies.....	186,026.55
Cost of Chicago, St. Paul, Minneapolis & Omaha stock.....	10,315,659.90
Cash on hand.....	1,904,698.14
Balance of sundry accounts.....	80,899.54
Total.....	\$154,744,615.78
Represented by:	
Common stock and scrip. C. & N. W. Ry.....	\$26,617,365.97
Preferred stock and scrip. C. & N. W. Ry.....	23,325,454.56
Capital stock of proprietary roads.....	12,785,000.00
Funded debt.....	80,891,000.00
Land income account.....	2,938,675.32
Railroad income account.....	9,187,119.93
Total.....	\$154,744,615.78

During the year there was a net increase of \$11,070,000 in the bonded debt. There were \$400,000 Winona & St. Peter first-mortgage bonds retired and the following new bonds issued: Debenture 5s. for purchase of Chicago, St. Paul, Minneapolis & Omaha stock, \$8,500,000; Dakota



Central 6 per cent. firsts, \$1,000,000; Ottumwa, Cedar Falls & St. Paul 5 per cent. firsts, \$1,600,000; sinking fund 5s. on new road, \$370,000.

New issues of stock were \$1,000 preferred and \$1,000 common for conversion of Peninsula bonds, and \$9,755,100 common in exchange for the stock of the Elgin & State Line and the Chicago, Milwaukee & Northwestern proprietary companies, consolidated with this company.

## TRAFFIC.

The traffic for the year was as follows:

	1883-84.	1882-83.	Inc. or Dec.	P. c.
Passengers carried.....	8,623,483	7,968,580	I.	654,923 8.2
Passenger-miles.....	256,386,369	248,856,303	I.	7,530,066 3.0
Tons freight carried.....	8,453,904	7,874,665	I.	579,239 7.4
Ton-miles.....	1,350,173,773	1,183,829,358	I.	166,344,415 14.1
Av. rate:				
Per pass.-mile.....	2.40 cts.	2.46 cts.	D.	0.06 ct. 2.4
Per ton-mile.....	1.31 "	1.42 "	D.	0.11 " 7.9

Rates continue to show a decrease on both passenger and freight business. This decrease has been continuous for a number of years.

The train movement for the year was as follows:

	1883-84.	1882-83.	Inc. or Dec.	P. c.
Train miles.....	5,531,828	4,913,507	I.	618,321 12.6
Freight.....	10,718,354	9,770,413	I.	947,941 9.7
Serv. and switching.....	5,675,267	5,347,974	I.	327,293 6.6

	1883-84.	1882-83.	Inc. or Dec.	P. c.
Total.....	21,925,449	20,031,896	I.	1,893,553 9.5
Car miles:				
Passenger.....	25,969,521	22,771,967	I.	3,197,554 14.0
Freight.....	210,708,269	187,411,933	I.	23,296,336 12.5
Ac. train load:				
Passengers, No.....	46	51	D.	5 9.8
Freight, tons.....	126	121	I.	5 4.1

Locomotive service cost 21.68 cents per mile run last year, against 21.05 cents the previous year.

The earnings per train-mile were as follows:

	1883-84.	1882-83.	Inc. or Dec.	P. c.
Earnings.....	\$1.30	\$1.44	\$1.60	\$1.74
Expenses.....	0.67	0.68	1.07	1.10
Net earnings.....	\$0.63	\$0.76	\$0.59	\$0.64

This shows a considerable decrease in the average receipts per train-mile last year.

## EARNINGS.

The earnings for the year were as follows:

	1883-84.	1882-83.	Inc. or Dec.	P. c.
Freight.....	\$17,677,866	\$16,894,352	I.	\$783,514 4.7
Passengers.....	6,153,071	6,119,616	I.	33,455 0.5
Express and mails.....	921,873	832,750	I.	89,123 10.7
Miscellaneous.....	207,814	235,116	I.	32,698 13.9
Total.....	\$25,020,624	\$24,081,834	I.	\$938,790 3.9
Expenses.....	15,140,957	14,072,586	I.	1,068,441 7.6
Net earnings.....	\$9,879,667	\$10,009,318	D.	\$229,651 1.3

Gross earn. per mile..... 6.727

Net earn. per mile..... 2.656

P. c. of exps..... 60.51

Expenses include taxes, which amounted to \$672,621 last year, against \$618,785 the previous year.

The following table shows the average mileage worked and the earnings per mile, etc., for seven years past:

	Miles operated.	Earnings per mile.	Per cent of expenses and taxes.	Net earnings per mile.
1878.....	2,036.98	\$7.241.63	51.66	\$3,500.33
1879.....	2,129.37	6,847.53	58.86	3,227.84
1880.....	2,215.83	7,829.73	48.60	4,024.56
1881.....	2,644.16	7,311.99	53.92	3,369.03
1882.....	3,032.90	7,869.24	53.37	3,641.73
1883.....	3,464.70	6,930.63	58.44	2,888.94
1884.....	3,719.58	6,726.70	60.51	2,656.12

Both gross and net earnings per mile last year were smaller than in any previous year in the tables. This was largely due to the increase in mileage of new road, on which the earnings are much lighter than on the older lines.

The disposition of net earnings was as follows:

Net earnings, as above.....	\$9,879,667.04
Interest on bonds.....	\$4,527,235.47
Rental of Iowa lines.....	1,467,167.76
Des Moines & Minneapolis.....	71,514.01
Sinking funds.....	83,000.00
Dividends.....	2,939,469.50
Total.....	\$9,018,408.74

Balance to credit of income..... \$761,258.30

Balance from previous year..... \$425,861.63

Balance, May 31, 1884..... \$9,187,110.93

Dividends paid were 8 per cent. on preferred and 7 per cent. on common stock. The net surplus over interest and rentals was equal to 9.5 per cent. on all the stock.

The report gives the following summary of the financial operations for the year in a condensed form:

## Resources of the Year.

Gross earnings.....	\$25,020,624.16
Increase in capital stocks.....	88,700.00
Increase in funded debt.....	11,070,000.00
Decrease in supplies.....	321,123.82
Decrease in cash.....	745,798.71
Balance from land grants.....	715,110.44
Decrease in sundry assets.....	827,516.69
Total.....	\$38,788,873.82

## Disbursements:

Operating expenses, taxes, interest, sinking funds, rentals and dividends.....	\$24,259,365.86
Expended for construction.....	6,108,437.72
Balance paid this year on purchase of stock of Chicago, St. Paul, Minneapolis & Omaha Co.....	8,278,659.90
Decrease in sundry liabilities.....	142,410.34
Total.....	\$38,788,873.82

This includes receipts from lands and sale of securities as well as the earnings of the road.

During the year 19,989 tons of new steel rails and 1,072,465 new ties were used in renewals. The usual improvements were made on all divisions, including improvements of road-bed, substitution of iron for wooden bridges, new sidings, etc. There were 9 miles of second track built on the Wisconsin Division and 21 miles on the Peninsula Division.

## NEW CONSTRUCTION.

An increase of 179.15 miles was made during the year, as follows: 125.49 miles completed of Dakota Central Railroad, in course of construction from previous year, extending from Irons, Dakota, to near Hawarden, at the Iowa state line; the connection at Hawarden, 0.63 mile, with the Toledo & Northwestern road in Iowa; 13.28 miles from Castlewood to Watertown, Dakota, being the finish of the Sioux Valley Line; the extension of the Aurora Branch in Illinois, 6.20 miles, from Batavia; the acquisition by purchase of the Cortland & Sycamore Branch, 4.64 miles, in Illinois; the completion of Maple River leased railroad, 26.86 miles from Holstein to Kingsley, Iowa, and 2.55 miles added for correction of distances in other lines previously constructed.

## RAILROAD EARNINGS IN JUNE.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.				
	1884.	1883.	Inc.	Dec.	P. c.	1884.	1883.	Inc.	Dec.	P. c.	1884.	1883.	Inc.	Dec.	P. c.
EASTERN ROADS.															
Boston, Hoosac Tun. & West.	87	87				\$7,830	\$6,561	11,269			\$42.4	\$35.1	7.3		
Chesapeake & Ohio.....	517	517				281,251	300,637				8,386	3.1	1,026	1,059	33 3.1
Eliz. Lex. & Big Sandy.....	284	284				1,263,836	1,493,005				226,169	15.3	545	643	98 15.3
Grand Trunk.....	2,321	2,321				286,945	295,422				8,477	2.8	811	835	24 2.8
Long Island.....	354	354				283,530	306,690				23,160	7.5	709	767	58 7.5
New York & New England.....	400	400				416,635	476,164				59,529	12.5	1,294	1,479	185 12.5
N. Y. Sus. & Western.....	147	147				3,906,175	4,156,872				250,697	6.0	1,838	2,030	192 6.0
Norfolk & Western.....	322	322				2,148,763	2,810,489				661,726	23.6	1,377	1,802	425 23.6
Pennsylvania.....	2,125	2,048	77		3.8	104,861	55,499	49,362			88.9	357	258	107	42.8
Philadelphia & Reading.....	1,560	1,560				112,374	108,698	3,676			3.4	598	578	20	3.4
Rochester & Pittsburgh.....	294	222	72		32.4										
West Jersey.....	188	188													
Total, 11 roads.....	8,082	7,933	149		1.9	8,935,170	10,118,189	64,307	1,247,326		1,106	1,275	169		
Total inc. or dec.....			149						1,183,019	11.7			169		13.3

## SOUTHERN ROADS.

Alabama Great Southern.....	290	290				79,893	72,225	7,668			10.6	275	249	26	10.6
Chesapeake & Ohio.....	517	517				258,800	323,845				65,045	29.1	501	626	125 29.1
Eliz. Lex. & Big Sandy.....	130	130				57,800	56,022	1,778			3.2	445	431	14	3.2
Cin., N. O. & Tex. Pacific.....	336	336				206,015	208,826				3,816	1.6	612	622	10 1.6
East Tenn., Va. & Ga.....	1,098	1,098				103,191	78,533	24,658			31.2	353	269	84	31.2
Mem. & Charleston.....	292	292				73,190	66,959	6,231			9.3	147	140	7	5.0
Fla. Ry. & Nav. Co.....	498	477	21		4.4	1,040,685	1,090,706				50,021	4.6	504	528	24 4.6
Louisville & Nash.....	2,065	2,065				130,243	123,727	6,516			5.2	247	235	12	5.2
Mobile & Ohio.....	528	528				161,956	170,660				8,704	5.1	292	308	16 5.1
Nashville, Chatta. & St. L.....	554	554				28,419	7,345	21,074			19,741	9.7	766	446	320 9.7
N. Orleans & Northeastern.....	193	105	90		85.7	251,819	258,691				6,872	2.7	333	342	9 2.7
Norfolk & Western.....	503	503				38,299	44,094				5,795	13.2	103	124	21 13.2
Rich. & Danville.....	757	757				28,148	31,755				3,607	11.3	95	107	12 11.3
Char. Col. & Augusta.....	370	370				128,433	131,313				2,880	2.2	365	373	8 2.2
Col. & Greenville.....	296	296				210	200	10		5.0	27.3	141	116	25	2.6
Virginia Midland.....	352	352				247	243	4		1.6	7,477	11.9	226	260	34 11.9
Western N. Carolina.....	210	200	10		5.0	142	142				13.8	224	196	28	14.3
South Carolina.....	247	243	4		1.6										
Vicksburg & Meridian.....	142	142													
Total, 19 roads.....	9,380	9,224	156		1.7	3,183,385	3,243,556	113,307	173,478		330	352	13		
Total inc. or dec.....			156						60,171	1.9			13		1.1

## CENTRAL GROUP.

Chi. & Eastern Ill.....	252	252	.....	.....	.....	126,127	144,143	.....	.....	18,016	12.5	501	572	.....	71	12.5
Chi. & West Michigan.....	410	410	.....	.....	.....	126,857	136,300	.....	.....	9,343	6.9	307	330	.....	23	6.9
Cin., Ind., St. L. & Chicago.....	342	342	.....	.....	.....	197,313	199,926	.....	.....	2,613	1.3	577	585	.....	8	1.3
Cin., Wash. & Baltimore.....	284	284	.....	.....	.....	122,190	149,404	.....	.....	27,304	18.2	430	526	.....	96	18.2
Cleve., Akron & Columbus.....	144	144	.....	.....	.....	44,331	46,543	.....	.....	2,212	4.7	308	323	.....	15	4.7
Cleve., Col. Cin. & Ind.....	391	391	.....	.....	.....	283,712	338,989	.....	.....	55,287	16.3	726	807	.....	143	16.3
Detroit, Lansing & No.....	258	226	32	.....	14.2	109,389	132,113	.....	.....	22,824	17.3	424	585	.....	161	17.3
Evansville & Terre Haute.....	146	146	.....	.....	.....	55,969	57,884	.....	.....	1,894	3.3	383	396	.....	13	3.3
Flint & Pere Marquette.....	362	347	15	.....	4.3	178,810	206,322	.....	.....	27,512	13.4	494	570	.....	76	13.4
Illinois Central.....	1,526	1,501	25	.....	1.7	735,633	762,402	.....	.....	26,769	3.5	482	508	.....	26	3.5
Indiana, Bloom. & West.....	696	696	.....	.....	.....	197,013	217,574	.....	.....	20,561	9.4	283	312	.....	29	9.4
Ohio & Mississippi.....	615	615	.....	.....	.....	289,163	330,732	.....	.....	41,569	12.6	470	538	.....	68	12.6
Peoria, Decatur & Ev.....	254	254	.....	.....	.....	50,626	48,744	2,132	.....	4.4	199	191	8	.....	4.4	.....
St. L., Alton & Terre Haute.....	195	195	.....	.....	.....	92,227	90,955	1,272	.....	1.4	473	466	7	.....	1.4	.....
Main Line.....	138	138	.....	.....	.....	55,558	57,049	.....	.....	1,491	2.6	403	414	.....	11	2.6
Belleville Line.....	138	138	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total, 15 roads.....	6,013	5,941	72	.....	.....	2,664,839	2,918,810	3,424	257,395	.....	.....	443	491	.....	48	.....
Total inc. or dec.....	.....	.....	72	.....	1.2	.....	.....	.....	253,971	8.7	.....	.....	.....	.....	48	9.8



presenting the matter of purchase of the leased roads operated by the company in the state of Iowa, consisting of the Chicago, Iowa & Nebraska Railroad, from the Mississippi River Bridge at Clinton to Cedar Rapids, 82.94 miles; the Cedar Rapids & Missouri River Railroad, from Cedar Rapids to the Missouri River at Council Bluffs, 274.01 miles, these two constituting the main line across the state, and the Maple River Railroad, a valuable connection running into Northwestern Iowa, 131.02 miles—total, 487.97 miles—now held under perpetual lease; together with their tributary and natural extensions, to wit, the Sioux City & Pacific Railroad, from Sioux City to Missouri Valley Junction, thence across the Missouri River to a connection with the Union Pacific Railway at Fremont, Nebraska, 107.42 miles; the Missouri Valley & Blair Railway & Bridge Co., owning the bridge and its approaches over the Missouri River at Blair; and the Fremont, Elkhorn & Missouri Valley Railroad, from Fremont to Valentine, near Fort Niobrara, Nebraska, with the Creighton Branch, 211 miles; total, 418.42 miles of tributaries, and the Blair bridge property.

"Notice was then given of the annual meeting of June 5, and also of a special meeting of the stockholders to be held at Chicago June 26, to act upon the proposition for an increase of common capital stock to the amount of 147,575 shares, to be used as part of the consideration to be paid for such purchase. At the annual meeting on June 5, 1884, the agreement of purchase was fully authorized and approved by unanimous vote of all the stockholders present and represented, and the issue of a new common stock approved, subject to the vote of the special meeting which had been called to act upon the question.

"At the special meeting of the stockholders on June 26 the increase of common capital stock to the amount of \$14,757,500 was duly authorized by the unanimous vote of all the stock represented at the meeting, the same being more than two-thirds in amount of all the capital stock of the company.

"Notice of such increase of common stock has since been given to the New York Stock Exchange, whose committee has recommended the listing of the same, and the concluding steps for the transfer of all the properties purchased are now being taken, and will be consummated at about the date of the issue of this report, and the stock issued.

"The total cost of the properties is \$27,875,100, subject to such slight changes as may come from adjustments of small items of account, remnants of right of way, etc., and will be represented by the

Amount of bonds and obligations assumed..... \$11,149,600  
Amount of Chicago & Northwestern Railway Co. 5 per cent. 25 years debenture bonds, at par..... 1,968,000  
Amount of Chicago & Northwestern Railway Co. common stock..... 14,757,500

for the whole 906.39 miles of railroad and the bridge property; the average cost will be at the rate of \$14,472 per mile in bonds and obligations, and \$16,281 per mile in common stock; total, \$30,753 per mile.

"The payment of this stock will be made to the three Iowa companies as follows: To the Chicago, Iowa & Nebraska, 58,743 shares; to the Cedar Rapids & Missouri River, 63,504 shares, and to the Maple River Co. 20,328 shares, being at the rate of 1 1/2 shares of Chicago & Northwestern common stock for one share of Chicago, Iowa & Nebraska stock, and one share of Chicago & Northwestern common stock for one share each of the other two Iowa companies.

"It is believed that the terms of purchase are eminently fair and just to all parties in interest, being based upon the results of experience and the known earnings of the properties, while to the Chicago & Northwestern Co. the transaction not only anticipates advantages to be derived from an increase in the business of the purchased roads in the future, and from funding their bonds, now bearing 6 per cent. and 7 per cent. interest, at a lower rate of interest at their maturity, but it also secures the traffic of the tributary lines from diversion to rival roads, prevents an indefinite enlargement of annual rental charges arising from growth of business contributed to the leased lines from connecting roads built by this company in the state of Iowa, and gives ownership and undisputed title to all improvements and permanent works now necessarily made on the leased roads.

"The annual charge to the Chicago & Northwestern Co., by assuming the bonds and obligations of the purchased properties, and by paying 7 per cent. on the new stock to be issued therefor, will be less than the amount of rental now accruing under the leases, after deducting the net income derived from the business of the tributary roads.

"The stockholders, at their June meeting, authorized an issue of \$6,000,000 of 5 per cent. 25 years debenture bonds of the Chicago & Northwestern Co., \$1,968,000 of which are to be used, at par, in the payment for these purchases, and the residue used from year to year as they may be required in payment for construction of double track and necessary improvements upon the company's roads and property, and for equipment, for which purposes no other provision is made.

#### GENERAL REMARKS.

"During the year the company has undertaken the construction of a railroad in Iowa, through the organization of the Ottumwa, Cedar Falls & St. Paul Co., which corporation it owns and controls, and the work has far progressed towards completion. The line was projected, and, after careful examination and survey, located to connect with this company's main line at Belle Plaine, Benton County, Ia., and runs in a south and south-westerly direction to the coal mines of the Star Coal Mining Co., about 40 miles distant, thence to this company's mines of the Consolidation Coal Co. in Mahaska County, about 64 miles from Belle Plaine. The road will be built in the best manner, with favorable grades, heavy steel rails, and be well equipped for coal carrying. It passes through a fine agricultural section of the state, and will have a good local support, but its chief business will be the movement of coal from these and other mines, whose present capacity and out-put are sufficient to furnish a heavy tonnage immediately upon the opening of the line.

"The road is bonded with \$1,600,000 first mortgage 5 per cent. bonds, running 25 years from March 1, 1884, which are guaranteed by the Chicago & Northwestern Co.

"The project of extending the Freeport line to a connection with the Mountfort & Galena Branch, and to the Mississippi River, and also to the Dixon Air Line, has assumed shape by the organization by this company of the Freeport & Mississippi River Railway Co.; surveys and locations have been made, and a small sum expended for procuring rights of way at some important points near the river, but no time has been fixed upon for its construction, and the convenience and prospects of the company will be regarded in its progress.

"A piece of about 17 miles of the Princeton & Western Railway, a corporation belonging to this company in Wisconsin, running from near Valley Junction on the Chicago, St. Paul, Minneapolis & Omaha Railway to Necedah, for which local aid was given in right of way and grading, is nearly completed, but no further work on this line is in progress.

"At the time of printing this report the general condition

#### RAILROAD EARNINGS, SIX MONTHS ENDING JUNE 30.

NAME OF ROAD.	MILEAGE.					EARNINGS.					EARNINGS PER MILE.					
	1884.	1883.	Inc.	Dec.	P. c.	1884.	1883.	Inc.	Dec.	P. c.	1884.	1883.	Inc.	Dec.	P. c.	
EASTERN ROADS.																
Bos. & Hoos. T. & W.	87	87				\$ 190,888	\$ 148,885	\$ 42,003			\$ 28.2	\$ 2,104	\$ 1,711	\$ 483	\$ 28.2	
Eastern	284	284				1,598,393	1,637,666				2.4	5,628	5,796		138 2.4	
Grand Trunk	2,319	2,321		2	0.1	7,968,503	9,032,379			1,063,876	11.8	3,436	3,892		456 11.7	
Long Island	354	354				1,127,055	1,092,815	34,240			3.1	3,184	3,087	97	3.1	
N. Y. & N. England	400	400				1,591,495	1,665,312			73,817	4.4	3,979	4,163		184 4.4	
N. Y., Susq. & W.	147	147				451,928	405,495			13,567	2.9	3,075	3,167		92 2.9	
Northern Central	322	322				2,620,255	2,944,614			324,359	11.0	8,137	9,145		1,008 11.0	
Pennsylvania*	2,110	2,048	62		3.0	23,333,256	24,352,586			1,019,350	4.2	11,058	11,891		833 7.2	
Phila. & Reading†	1,560	1,093	467		42.8	14,218,764	10,665,859	3,552,905			20.5	9,115	10,033		918 9.2	
Rochester & Pitts.	294	174	120		70.0	518,003	210,210	307,793			146.4	1,792	1,208	584	46.2	
West Jersey	188	183	5		2.8	527,509	477,859	49,650			10.4	2,806	2,611	195	7.5	
Total 11 roads...	8,065	7,413	654	2		54,146,049	52,993,980	3,686,591	2,534,222		6,714	7,149		435		
Total inc. or dec.			652		8.8			1,152,369		2.2				435	6.1	
SOUTHERN ROADS.																
Ala. Gt. Southern...	290	290				519,688	480,650	39,029			8.1	1,792	1,657	135	8.1	
Ches. & Ohio...	517	517				1,708,347	1,790,851			88,612	4.9	3,504	3,475		27 4.9	
Ediz., Lex. & B. S.	130	130				324,391	316,627			7,764	2.4	2,496	2,436	60	171 2.4	
Cin., N. O. & Tex. P.	333	336				1,210,313	1,157,472	52,841			4.4	3,602	3,445	177	4.4	
East Tenn., Va. & Ga.	1,098	1,066	32		3.1	1,852,484	1,791,257	61,227			3.4	1,687	1,680	7	0.4	
Memphis & Char.	292	292				649,542	563,851	85,691			15.2	2,224	1,931	293	15.2	
Fla. Ry. & Nav. Co.	480	477	3		0.6	518,791	441,022	77,769			17.6	1,081	924	157	17.6	
Louisville & Nash.	2,065	2,040	25		1.2	6,504,571	6,375,383	129,188			3.0	2,179	2,135	44	1.7	
Mobile & Ohio...	528	528				972,155	963,146	9,009			0.9	1,841	1,824	17	0.9	
Nash. Chat. & St. L.	534	534				1,145,181	1,101,690	43,491			3.9	2,007	1,989	18	0.9	
Norfolk & Western	503	445	58		13.0	1,240,502	1,200,435	37,067			3.0	2,478	2,718		240 8.9	
N. Or. & Nor'east.	195	66	129		195.4	189,737	38,667	151,070			390.7	973	586	387	60.0	
Rich. & Danville	757	757				1,825,102	1,764,806	60,296			3.4	2,411	2,331	80	3.4	
Char. Col. & Aug.	357	339	18		5.3	357,899	393,779			35,880	9.1	1,063	1,162		159 14.1	
Col. & Greenville	296	296				298,855	306,845			67,990	18.5	1,010	1,237		227 18.5	
Va. Midland	352	352				752,704	730,694			3,990	0.5	2,082	2,093		11 0.5	
Western N. C.	205	193	12		6.3	190,934	146,364	44,570			30.5	931	758	173	27.8	
South Carolina	247	243	4		1.6	577,339	635,265			55,926	8.8	2,337	2,607		270 10.4	
Vicks. & Meridian	142	142				224,134	229,746			5,612	2.4	1,578	1,618		40 2.4	
Total 19 roads...	9,344	9,063	281			21,108,569	20,507,867	858,712	258,010		2,250	2,263		4		
Total inc. or dec.			281		3.1			600,702		2.9					4 0.2	
CENTRAL GROUP.																
Chi. & Eastern Ill.	252	252				698,401	787,307			88,907	11.3	2,772	3,124		352 11.3	
Chi. & West Mich.	410	397	13		3.2	764,741	754,031	10,710			1.4	1,869	1,869		33 1.7	
Cin., Ind. St. L. & Chi.	342	342				1,116,153	1,158,132			47,979	4.1	3,247	3,386		139 4.1	
Cin., Wash. & Balt.	284	284				793,578	863,837			72,259	8.3	2,794	3,048		254 8.3	
Clev. & Akron & Col.	144	144				225,604	250,431			24,827	9.9	1,507	1,739		172 9.9	
Clev. Col. C. & Ind.	391	391				1,803,680	2,004,496			200,816	10.0	4,613	5,127		514 10.0	
Det., Lan. & No.	258	226	32		14.2	678,639	743,402			64,713	8.7	2,631	3,289		658 20.0	
Ev. & Terre Haute.	146	146				327,646	338,238			10,592	3.1	2,244	2,317		73 3.1	
Flint & Pere Marq.	362	347	15		4.3	1,211,495	1,262,002			50,507	4.0	3,347	3,637		290 8.0	
Illinois Central	1,526	1,501	25		1.7	4,807,613	4,969,666			162,033	3.2	3,150	3,311		161 4.6	
Ind., Bloom. & West	696	696				1,221,621	1,387,514			165,893	12.0	1,755	1,963		238 12.0	
Lake St. & Mich. So.	1,340	1,340				7,330,900	7,330,900			1,888,271	20.5	5,471	6,880		1,409 20.5	
Michigan Central	1,408	1,408				5,693,500	6,740,000			1,136,500	16.8	3,817	4,591		774 16.8	
Ohio & Mississippi	615	615				1,960,170	2,042,392			82,132	4.0	3,187	3,318		131 4.0	
Peoria, Dec. & E. H.	254	254				363,284	333,989	29,295			8.8	1,430	1,315	115		8.8
St. L., Alton & T. H.	195	195				677,690	688,912			11,222	1.6	3,475	3,533		58 1.6	
Main Line	138	124	14		11.3	378,591	393,348			14,757	3.7	2,743	3,172		429 13.4	
Belleville Line	3,569	3,566				7,448,857	7,383,793	65,064			0.9	2,080	2,071	18		0.9
Wab. St. L. & Pac.	12,387	12,288	99		0.8	37,406,212	41,322,571			105,069	4,021,428		3,020	3,363		343
Total 18 roads...	12,387	12,288	99			37,406,212	41,322,571			2,916,359	9.5				343	
Total inc. or dec.			99		0.8										343	10.2
NORTHWESTERN ROADS.																
Bur., Ced. Rap. & No.	714	714				1,278,744	1,280,858			2,114	0.2	1,791	1,794		3 0.2	
Central Iowa	401	395	96		31.5	666,986	577,824	89,162			15.4	1,663	1,896		233 12.3	
Chi. & Alton	850	850				3,859,561	3,805,579	53,982			1.8	4,541	4,477	64		1.8
Chi., Mil. & St. P.	4,760	4,520	240		5.3	10,428,000	10,688,938			260,938	2.4	2,101	2,374		183 7.6	
Chi. & N. W.	3,841	3,580	261		7.2	10,570,599	10,888,915			318,316	2.9	2,762	3,042		290 9.5	
Chi., St. P. M. & O.	1,290	1,170	120		10.3	2,654,344	2,363,935	290,409			12.3	2,058	2,020	38		1.9
Des Moines & W. Ft. D.	138	138				155,959	136,406	19,553			14.4	1,130	988	142		14.4
Green Bay, W. & St. P.	220	220				170,841	191,021			20,180	10.6	777	868		91 10.6	
Ill. Cent., Iowa lines	402	402				792,923	930,527			137,604	14.8	1,972	2,315		342 14.8	
Marquette, H. & O.	126	100	26		26.0	346,913	291,594	55,319			32.6	2,733	2,616	137		5.3
Mil., L. S. & W.	374	323	51		15.9	525,895	475,813	50,082			10.5	1,406	1,473		67 4.5	
Mil. & Northern	227	185	42		22.7	255,423	229,690	25,733			11.2	1,125	1,242		117 9.4	
Wisconsin Central	440	440				717,892	678,272	39,530			5.8	1,631	1,541	90		5.8
Total 13 roads...	13,783	12,947	836			32,424,020	32,500,342	653,880	739,152		2,352	2,511		159		
Total inc. or dec.			836		6.4				85,322	0.3				159	6.4	
ROADS NORTHWEST OF ST. PAUL.																
Canadian Pacific...	2,141	1,392	749		53.5	2,194,712	2,226,502			31,790	1.4	1,025	1,590		574 35.9	
Northern Pacific...	2,470	1,647	823		49.8	5,938,248	3,531,060	2,407,188			68.2	2,404	2,144	260		12 3
St. P. & Duluth...	227	210	17		8.1	495,734	514,068			18,364	3.6	2,141	2,448		294 12.8	
St. P., Minn. & Man.	1,387	1,250	137		10.9	3,657,518	3,912,542			255,024	6.5	2,637	3,130		493 15.9	
Total 4 roads...	6,225	4,499	1,726			12,286,212	10,184,202	2,407,188	305,178		1,974	2,264		290		
Total inc. or dec.			1,726		38.4			2,102,010		20.8				290	12.6	
SOUTHWESTERN ROADS.																
Ft. Worth & Den.	110	110				223,700	171,500	52,200			30.4	2,034	1,559	475		30.4
Gulf. Col. & S. F.	536	503	33		6.6	797,658	836,700			39,042	4.7	1,488	1,903		175 10.5	
K. C. Ft. S. & Gulf.	369	369				1,152,792	861,179	271,323			30.8	2,963	2,265	698		30.8
L. R. & Ft. S. & W.	168	168				225,388	242,934			17,546	7.2	1,342	1,446		104 7.2	
Lt. R. K. Miss. R. & T.	173	173				154,330	185,287			39,957	16.7	892	1,071		179 16.7	
Missouri Pacific*	1,805	1,895				7,636,226	9,051,229			15,003	0.2	4,030	4,388		8 0.2	
Mo., Kan. & Tex. **	2,211	2,200	11		0.5	3,265,949	3,317,432			51,583	1.6	1,477	1,508	31		2.0
Mt. L. Ft. S. & W.	160	128	32		25.0	2,232,452	89,585	133,867			149.4	1,397	700	697		98.6
St. L. & San Fran.	754	724	30		4.1	2,118,965	1,696,972	421,993			24.9	2,810	2,344	466		19.9
Vicks., Sh. & Pac.	119	73	46		63.9	58,853	36,810	22,043			59.9	495	504		8 1.8	
Total 10 roads...	6,515	6,363	152		2.4	15,837,123	15,109,628	901,626	154,131		2,434	2,375		59		
Total inc. or dec.			152		2.4			747,495		4.9				59		2.5
FAR WESTERN AND PACIFIC ROADS.																





Published Every Friday.

## EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

## FOUR YEARS OF RAILROAD CONSTRUCTION.

## II.

Last week we reviewed generally the railroad construction in the United States, and noted the difference in the mileage built east and west of the Mississippi. We purpose now to take up the construction in the several groups of states, which is likely to have a bearing on the prosperity of the railroad systems of the several districts. We need not say that the country has had a marvelous growth within the past four years; and with larger population and the very large addition to manufacturing establishments, etc., there will be permanently a much larger traffic than formerly. There are very few sections where this is not true. Obviously if this larger traffic were all carried by the railroads of 1879, they would be having a much heavier business than then. In some parts of the country, it is true, the growth in population and production has been much faster than others, and there a large increase in railroad mileage may be better supported than a smaller one elsewhere. Dakota, Eastern Oregon and Washington, for instance, a few years ago had very few people, and their railroad system would have to increase very rapidly to keep up with production. But the extraordinarily rapid growth has been almost wholly in the West, and the growth of the West increases the traffic of the railroads between them and the East, so that the aggregate traffic of the roads between the Mississippi and the seaboard is likely to increase much faster than the production of the country through which they run.

That the figures showing the total mileage and the construction in the past four years in each group of states may be before us, we republish here the table given last week, as follows:

	1883.	1879.	Incr'se.	P.c.
<b>New England</b> .....	6,231	5,903	328	5.6
<b>Middle States:</b>				
(N. Y., N. J., Pa., Del. & Md.).....	17,860	14,985	2,875	19.2
<b>South Atlantic States:</b>				
(Va., N. C., S. C., Ga. & Fla.).....	10,004	7,521	2,483	33.0
<b>South of the Ohio:</b>				
(W. Va., Ky., Tenn., A. Miss. & E. La.).....	8,847	7,147	1,700	24.0
<b>North of the Ohio:</b>				
(O., Mich., Ind., Ill. & Wis.).....	30,978	24,004	6,974	29.0
<b>N. W. Miss. Valley:</b>				
(Minn., Dak., Ia., Neb., Mo. & Kan.).....	24,896	16,064	8,832	49.4
<b>S. W. Miss. Valley:</b>				
(Ark., Ind. T., W. La. & Tex.).....	9,104	4,033	5,071	126.0
<b>Rocky Mt. Territory:</b>				
(N. Mex., Ariz., Utah, Col., Wy., Mon. & Id.).....	8,344	3,524	4,820	165.0
<b>Pacific States:</b>				
(Cal., Or. & Wash.).....	4,329	2,716	1,613	60.0
<b>Total</b> .....	121,593	86,497	35,096	40.5

Very little railroad has been built in New England since 1879, we see, and further examination will show that nearly as much was built there during the four

years ending with 1879, and only 722 miles in the nine years from 1874 to 1883, which is an increase of but 13 per cent. The New England roads therefore have not to suffer much from the diversion of traffic to new roads, and profit by the growth of the country in railroads and everything else. Relatively they should be better off than the railroads of any other part of the country.

New England has 9.95 square miles of area to a mile of railroad, and the population of 1880 was at the rate of 644 per mile of railroad. The area is larger than in several other sections, which is due largely to the fact that three of the New England States, with more than three-fourths of its area, are agricultural, and a considerable part of two of them is wilderness. The population per mile of railroad is exceeded only in the Middle States.

What we have called the Middle States, from New England to the Potomac, a district of great population, manufactures and commerce, to or through which a large portion of the products of all the rest of the country is sent, had what anywhere else in the world would be called an enormous increase in its railroad mileage, amounting to more than 19 per cent., though it is not half as great as the percentage of increase of the whole country. Against this increase of 2,875 miles from 1879 to 1883, there was an increase of 2,640 miles in the seven years from 1872 to 1879. The larger part of the new railroads in the Middle States was built to afford new outlets to old traffic, or at least to traffic districts which already had outlets. This includes two new trunk lines and several new outlets for the bituminous coal and coke of Western Pennsylvania; but also a considerable mileage required for the development of new mines, etc., which the great demand for coal and iron made profitable. New York had an increase of 1,341 miles (24 per cent.) and Pennsylvania one of 1,168 miles (19 per cent.) in the four years.

Then there are 6.27 square miles of territory and 658 inhabitants (by the last census) per mile of railroad in the Middle States. New York has 6.48 square miles and 692 inhabitants; Pennsylvania, 6.22 miles and 592 people per mile of road.

In the group next west, consisting of the five states west of Pennsylvania, north of the Ohio and east of the Mississippi, the mileage increased 6,974, or 29 per cent., making it the enormous amount of 30,978 miles, though a large part of two of the states, Michigan and Wisconsin, is very thinly peopled. It was in these five states that construction was greatest previous to 1873, and, at the end of that year, all but Northern Michigan and Northern Wisconsin were very well supplied with lines, Ohio having a mile of railroad to 9.6 square miles of territory; Indiana one to 9.7, and Illinois one to 8.5 square miles. But these states have increased their mileage in the four years after 1879 just about as much as in the eight years from 1871 to 1879; and at the beginning of this year had a mile of railroad for less than 8 square miles of area. Ohio having one to 5.6 square miles, Illinois one to 6.2, and Indiana one to 6.5. When we remember that there are nearly 10 square miles to a mile of railroad in New England and 6½ in the Middle States, we see what a bountiful provision of transportation this is. In Great Britain to every mile of railroad there are 6.4 square miles of territory and 1,840 inhabitants; the three states of Ohio, Indiana and Illinois have but 10 per cent. more area than Great Britain (132,670 square miles, against 121,230), but they have about 3,000 more miles of railroad (21,788, against 18,700). The population of the three states in 1880 was not quite one-fourth that of Great Britain in 1881 (8,255,000, against 34,900,000), and per mile of road, reckoning an increase of 12 per cent. in the states and 3 per cent. in Great Britain since the census, there were 1,912 inhabitants in Great Britain and 424 in the three states. Only two things enable so many railroads to live in these (and some other) states: first, the great amount of transit traffic, which can hardly be said to exist in a little country like Great Britain; and second, the much greater cheapness of our railroads, the capital of the British roads being more than \$202,500 per mile; that of the railroads in these states, about \$58,300.

The increase in this district has been relatively greatest in the two states which had a large territory unsupplied, namely, Michigan and Wisconsin, in both of which it was 40 per cent. But Ohio, whose railroads would gridiron it with parallel lines spaced only 5½ miles apart, has gained more than 30 per cent. in the four years; Indiana 28 per cent., and Illinois 19 per cent. The Ohio and Indiana new mileage, perhaps less than any other, was called for by the local requirements of the states, and indeed was intended largely to secure a share in the through traffic which

was already abundantly provided for. The lines in these states profit greatly by the growth of the country west of the Mississippi.

Going further west, across the Mississippi, we come to the territory where there was most room for railroads, it having a great area of unoccupied fertile lands, and growing rapidly in population. We have included all the grain-growing agricultural states in this territory—the two tiers of states west of the Mississippi and extending from Missouri and Kansas on the south, north to the Dominion boundary. These are not all new states. Missouri has long been settled, but a considerable part of its territory was but poorly supplied with railroads in 1879, and though much of that state and also Eastern Kansas and Iowa and Southeastern Minnesota were already very well served then, all the states required a large additional mileage before they could be profitably occupied and developed, as well as most of Dakota and a very large part of Nebraska. This country in nature is very like that adjoining it on the east, except that the western tier of states, Kansas, Nebraska and Dakota, have an immense area (probably more than half of their surface) which cannot be considered agricultural, and will be sufficiently served by railroads five to ten times as far apart as those of a system suited to grain-growing districts.

Now in this group of six states in the northwest Mississippi Valley the railroad system has increased since 1879 from 16,664 to 24,896 miles, an increase of 8,232 miles, or nearly 50 per cent., which is nearly equal to the mileage constructed there during the eight years previous to 1880.

There can be little doubt that this district will eventually be able to support a mileage as great as this, though there can be no doubt either that a considerable part of the new mileage, especially in Iowa, is located where it was not required for the service of the country. This always occurs when railroads are built solely to serve the financial interests of rival corporations, but it seems to have been more than usually the case in Iowa, where a number of very powerful corporations have insisted on establishing themselves in districts which one could easily serve, tempted by the prospective great traffic of a rapidly growing country.

In that state the increase was 2,437 miles (51 per cent.) in four years, and it now has a mile of railroad to 7.7 square miles of area, though the northwest quarter of the state is still very thinly peopled, and there is not a large city in the state. This growth seems to us more remarkable than the increase of 524 per cent. in Dakota, which had but begun to be occupied in 1879, or the increase of 65 per cent. in Nebraska. Kansas was supplied too early, about 1873, and its increase has been but 28 per cent. since 1879. Minnesota, an exception to other states, had gained 50 per cent. from 1876 to 1879, and added but 30 per cent. afterward, only a small part of the farming country in the state remaining improved then; Missouri, which does not grow fast, gained 23½ per cent. Thus the part of this territory where the mileage increased faster than the average of the whole country was Iowa, Nebraska and Dakota, and on the early growth of population and production there the future of many enterprises depends. So far that growth has been all that could reasonably have been expected, except, perhaps, in Iowa, and it has been very great there. Most of these railroads, at least in Dakota, were not built with the expectation that they would be remunerative immediately or for some time after their completion, many having been located when the country along their lines was almost entirely uninhabited. Such an enterprise is in its nature uncertain, for though we may be sure that the country along the line will eventually support the railroad abundantly, we cannot know how soon that time will come, nor can we know how near a rival line may be built to divert the traffic—though in this country we cannot know that in New York any more than in Dakota.

West of this new agricultural district we have the vast and for the most part arid territory stretching from Mexico to British America, and westward to the tier of states on the Pacific, a country of plains and mountains, whose industries are mainly grazing and mining, the larger part of which has been accessible but a few years. In 1871 the only railroads here were the line of the Union and Central Pacific across the continent, 328 miles in Colorado and short lines in Utah and Nevada—not a mile in New Mexico, Arizona, Montana or Idaho. Altogether this vast Rocky Mountain territory had 1,637 miles at the close of 1871, 3,524 in 1879, and 9,344 in 1883. A very considerable portion of the 5,820 miles built since 1879 is included in the new lines to the Pacific, for the traffic to which the original line sufficed abundantly, so far as capacity is concerned. Great activity in mining about



1879 and 1880 had much to do with this large construction. More even than new lines in the unsettled prairies were such mountain railroads hazardous enterprises, because the eventual development of the country is more uncertain. Some of the new mountain lines have justified themselves abundantly, however, and others promise to do so in the near future; but a very considerable mileage is now very unpromising.

On the Pacific coast progress had not for many years been as rapid as in most new states, until the recent development of Oregon and Washington. The railroad mileage in the two latter was trifling, and most of their territory inaccessible. The 1,084 miles which the whole coast had in 1868, increased to 2,716 at the end of 1879, and to 4,329 last year. The gain in the last four years in Oregon and Washington was 941 miles (86 per cent.), and in California 672 miles (30½ per cent.), and on the whole coast 60 per cent. A considerable amount of road has been built through unproductive country in California, to serve as parts of through lines, but aside from these there is abundant territory to support all the Pacific coast mileage, the only question being the rate of growth, which has recently been very rapid in Oregon and Washington, where, however, some lines are still very unprofitable.

We now return to the Atlantic coast, in order to take a separate view of the progress of the South in railroad construction. This part of the country had not fairly recovered from the war until near 1879. At the end of 1865 the whole country south of the Potomac, the Ohio, Missouri and Kansas had 9,457 miles of railroad. At the end of 1873 this had increased to 14,956 miles; at the end of 1879 to 18,701; at the end of last year to 27,955 miles. Thus, in the first eight years after the war, the increase was 5,499 miles (58 per cent.); in the next six years of moderate construction, to 1879, it was 3,745 miles (25 per cent.), but in the last four years no less than 9,254 miles (49½ per cent.) This is a more rapid rate of growth than in the North, taken as a whole, for there (excluding the Rocky Mountain district and the Pacific coast, which are west of the South as well as the North) the increase of 18,409 miles was at the rate of but 30 per cent.

We have divided the whole South into three sections. Of these the South Atlantic States, Virginia to Florida, inclusive, are as old as New England and the Middle States, but are very different in their industries, and until recently had not grown rapidly. In the 19 years from 1860 to 1879 its railroad system was extended but 2,410 miles (47 per cent.); in the last four years it has increased 2,483 miles (33 per cent.). No doubt these states have vastly improved within the past five or six years, but they have not in their most prosperous times heretofore given a very liberal support to their railroads, and it is questionable whether a considerable part of the new mileage is not superfluous, or at least premature.

Next west, directly south of the Ohio and east of the Mississippi, we have five states and a small part of another (West Virginia, Kentucky, Tennessee, Alabama, Mississippi and East Louisiana), which are newer than those just named, and somewhat different in character. In these states the construction was considerable before 1873, and from 1872 to 1879 the mileage increased 1,578 (28 per cent.), while in the last four years the gain is reported to be but 1,700 miles (24 per cent.) and therefore much less than in the Southern Atlantic States, contrary to the course of things in the North. This territory has still a small mileage compared with its area, but almost everywhere in the South a much larger area than in the North is required in order to afford the same amount of traffic.

Finally we have the Southwestern Mississippi Valley, West Louisiana, Arkansas, Indian Territory and Texas, a large area, most of which is still very new. This district had but 717 miles of railroad at the end of 1865 and 1,496 in 1871. Thence to 1879 it gained 3,316 miles; and in the last four years 5,071 miles, or no less than 126 per cent., bringing it up to 9,104 miles. This is a small mileage for so vast a territory, in which a few roads have already had heavy earnings per mile; but it requires an extraordinarily rapid growth of a country to support at once so great an addition to the mileage, and it is by no means certain that regard has always been had to the profits of operation so much as to the profits of construction and financing in some of the new roads here.

We have thus gone over the entire railroad construction of the country for the last four years; but before closing we will again present our last week's statement, giving the mileage on each side of the Mississippi, which has been:

	1880.	1879.	Increase.	P. c.
East of Mississippi.....	78,089	59,744	18,345	24.0
West " " " " " " " " " "	47,504	26,573	20,931	77.9
Total .....	125,593	86,317	39,276	45.5

The enormous construction west of the Mississippi is one of the greatest industrial feats in the world's his-

tory. It has made a vast area of land, but comparatively not a very large area of fertile land, accessible. Not a little of the new road may have come too soon, and some of it may be superfluous—some of it certainly is—but it is not probable that the over-construction there will be so harmful as that east of the Mississippi, where a very large part of the new road secures traffic only by taking it from older roads which were abundantly able to handle it all, or could have been made so at one-twentieth of the cost of the new roads. These superfluous lines have for their chief effect not the development of new resources, but, first, the reduction of the profits of the old railroads; second, the increase of the total cost of transportation much above what it would be without them, and, finally, in a great many cases, the loss to investors of a large part of the capital put into the new roads. It cannot be questioned that in almost every state in prosperous times some extension of the railroad system is required; neither can it be questioned that in the older states, and often in the newer ones, the amount of road constructed and the capital expended are altogether out of proportion to the additional facilities required. The country as a whole would probably be richer to-day, and the cost of conducting its transportation would be materially less, if instead of 35,000 but 20,000 or 15,000 miles of railroad had been built since 1879.

#### Cheap Bread through Cheap Transportation.

The average price of wheat in England in the first half of this year was the lowest since 1780, when it was the lowest ever known. This is almost entirely due to the cheapening of transportation, both by land and by sea, which enables the Manchester cotton-spinner to obtain his year's supply of bread from Kansas, Dakota, California, Australia, Russia or the interior of India for a few days of even his poorly paid labor. The transportation from Australia to London, more than halfway around the globe, is reported to cost now only 13 to 20 cents a bushel—an unheard-of low rate, which does not nearly pay the cost of the voyage, and so cannot be permanent; though it is not so unsatisfactory as a similar rate from California would be, because there are large exports from England to Australia which doubtless pay a rate several times as high as this.

This cheapening of transportation over long ocean routes, as from Australia, California and India, has had very much to do with the sharper competition which the farmers of the Mississippi Valley now feel in supplying Western Europe with bread. It was in our favor so long as Russia was our only important competitor, because our grain had the longest voyage to make; but when the ocean rates became so low as to admit of shipments from more distant countries, like California, Australia and India, it was against us. To permit large exports from India, a combination of low ocean rates with low rail rates has been required and secured.

The Mississippi Valley was the first country that was enabled by reductions in the cost of transportation to flood Europe with grain. Now most countries able to produce a surplus share this advantage with us, and it is difficult to see how the distant countries can gain much advantage hereafter, the greater part of the cost of transportation a few years ago having already disappeared. Perhaps there is more room in Russia for a great increase of exports than anywhere else, the cost of transportation, storage, transfer, etc., there being very great, and a large part of the immense grain-growing district being distant from railroads or steamboats. It is questionable, however, whether great progress would be made in increasing production in Russia (owing to the character and habits of the people), if the cost of transferring their wheat from their farms to the ports of Western Europe were as low as anywhere else; but in course of time probably there would be.

Of all the producing districts which compete with the Mississippi Valley, probably the most formidable is our own Pacific coast. Up to the end of the war the largest exports from California in any year had been about 3,000,000 bushels; recently they have exceeded 40,000,000; and the increase from Oregon and Washington has recently been more rapid than from California. During the last crop year more than one-fourth of our exports of wheat and flour were from the Pacific coast, and they have in good years exceeded the largest exports ever made by the 250 million people of India, and been three times as great as the largest exports from Australia and New Zealand. The merchants and carriers of the Pacific coast profit by this, but those of the rest of the country very little, except by the increased consumption of its manufactures on that coast, and so far as the farmers of the Mississippi Valley are concerned, they suffer more

from the competition of the Pacific coast than from that of any foreign country. It, too, is probably likely to increase its exports, at least for the next few years, faster than India or Australia, though at the present rate of increase of cultivation it will not be many years before its wheat lands will be substantially all utilized.

It seems to be feared by some that the extension of wheat-growing in other countries is likely to leave our farmers and carriers with little to do. Of this there is not the slightest danger. An over-production of wheat is possible, but it will not last long. If bread becomes extremely cheap, consumers will have more to spend for other things, and there will certainly follow an increased demand for meat; and no country on the globe can compete with this in producing the only meat which can be cheaply carried in good condition, namely, pork. Neither California nor Australia nor India grows much Indian corn, nor fattens many hogs. And generally, when by any means, whether by the opening of new lands or by improving the methods of production, the world is able to produce more than it would consume by its old way of living, we may be sure that it will at once improve its way of living, and by living better, take all that the world can produce.

The railroads that have reported their July earnings so far include some of the most important systems. The reports are scanned with unusual interest now, owing to the recent great changes in the prices of stocks and anxiety as to the condition of business. The gains or losses as compared with last year will be found under the usual head on another page, but when changes are apprehended it is desirable to compare with previous months as well, which we do below for some of the companies, giving the increase or decrease in each of the past four months, and the aggregate gain or loss for the first three months of the year. For the Northern Pacific the gains have been:

	July.	June.	May.	April.	Jan. to Mar.
Nor. Pac.....	\$176,226	\$266,128	\$496,754	\$841,102	\$862,100

This road had exceptional sources of traffic in April and May, and the earnings have decreased since materially, the totals having been in successive months:

	April.	May.	June.	July.
\$1,441,514	\$1,286,700	\$1,095,785	\$1,026,449	

As the decrease from June to July was quite small it is probable that the normal condition of traffic has been reached and that there will be little change now until the new crop begins to come forward, when earnings may be expected to increase largely. It has been disappointing to some, doubtless, to see the rate of increase fall from 140 per cent. in April and 62 per cent. in May to less than 21 per cent. in July. But the increase is still considerable.

The Canadian Pacific, which for the first six months of this year suffered a decrease of \$33,958 (1½ per cent.), had an increase of \$12,110 (2½ per cent.) in July.

The gains and losses of some important railroads west and northwest of Chicago have been:

	July.	June.	May.	April.	Jan. to March.
C. M. & St. P. ....	+\$120,715	-\$104,180	-\$47,513	-\$23,379	-\$85,974
C. & N. W. ....	188,300	270,180	84,123	50,421	100,210
C. St. P. M. & O. ....	20,600	19,800	53,337	114,029	60,508
Gen. Iowa.....	4,650	8,400	17,446	22,102	51,397
Chic. & Alton.....	6,884	3,545	3,774	5,923	43,344
Total.....	-\$58,519	-\$350,842	-\$35,178	+\$168,531	-\$11,124

All these but the Central Iowa and the Alton make a more favorable comparison in July than in June; the Milwaukee & St. Paul turning a loss into a gain, the Northwestern having a smaller loss, and so on, and in the aggregate the decrease is but one-sixth as great as in June, though larger than in any other month.

The Louisville & Nashville has gained and lost as follows:

	July.	June.	May.	April.	Jan. to Mar.
—\$62,982	—\$49,920	+\$85,506	+\$156,300	—\$42,761	

The comparison is more unfavorable for July than for any other month, but for the seven months there is a small increase in earnings.

The Wabash, St. Louis & Pacific, which has reported only occasionally for some time, reports for the seven months, showing the following:

	1880.	1881.	1882.	1883.	1884.
Per mile.....	\$6,375,877	\$7,359,017	\$8,830,085	\$8,000,304	\$8,683,155

There has been little change in mileage since 1882, and not much change in earnings.

A financial writer seeks to explain the fact that there was, compared with last year, an increase in the earnings of the Milwaukee & St. Paul in July and at the same time a decrease in those of the Northwestern, by saying that "the St. Paul lines in Wisconsin and Minnesota are better located than those of the Northwestern." But if they are better located this year, they were last year also; better location does not explain why one gains more than the other, though it may explain why one earns more per mile than the other,—and, by the way, the Northwestern earned



\$522 per mile in July, and the Milwaukee & St. Paul \$409. If the latter is better located in Wisconsin and Minnesota, the former is in Illinois and Iowa. The St. Paul's improvement is perhaps due to its new Council Bluffs line, which may not have fairly developed its traffic last year, and whose through traffic largely and its local traffic probably chiefly is business diverted from the Northwestern's Council Bluffs line. The St. Paul has but a trifling increase in earnings per mile, however—from \$405 to \$409; but the Northwestern has a large decrease—from \$603 to \$522. The gross earnings were nearly the same on both in July, but the St. Paul works 1,000 more miles of road than the Northwestern.

For the seven months ending with July the North western has had a decrease of 4 per cent. in earnings; the St. Paul a decrease of 1½ per cent.

Among the many responses to our circular as to joints, nut-locks and cross-ties is one in which the writer makes a careful argument in favor of the jamb-nut, which we do not publish, as our correspondent does not seem to be sound in his facts. He affirms that "railroad men know, as do all machinists and engineers, that there is not, nor can be anything in the way of a nut-lock or lock-nut, or holder or fastener, equal to a jamb-nut." He says also that the jamb-nut is the cheapest, the safest, the best, and the only way universally used for holding a nut rigid. Now, as a matter of fact, there is not a single line, if we do not err, in the practically complete reports for the whole United States which have now been received, which reports the use of jamb-nuts as a standard for track joints. Not the least valuable feature in such statistics is in the revelation it gives of what is current practice, which to many is a complete surprise.

The final presentation of the complete statistics may be delayed for two or three weeks yet, to afford time for the receipt of a few straggling reports, and especially to receive some reports from abroad. Meanwhile it may be safely stated that on an enormous majority of the mileage reported, joints are broken instead of even, and that the Verona nut-lock is very much more used than any other, vulcanized fibre coming next.

Those who have delayed sending the information called for in our circular should forward it at once, in order that it may reach us in time to be included in the totals representing the practice of the country.

#### Movement of the New Wheat Crop.

The movement of the new wheat crop, which had been light previously, is shown very clearly in the week ending July 26, not merely by large receipts at St. Louis, but also by an increase of 233 per cent. at Toledo, and, more significant still, by large receipts at Baltimore and Philadelphia. The weekly receipts at the Western markets most affected have been:

	Chicago.	Milwaukee.	Toledo.	St. Louis.	Total.
Av. in June:	1,094,232	297,294	87,462	84,488	781,488
Week to July 5:	71,424	256,405	77,159	80,480	604,167
" " 12:	90,893	268,820	65,804	280,801	757,921
" " 19:	97,623	183,753	74,786	491,189	888,743
" " 26:	1,147,496	204,804	325,155	480,771	1,385,641

An approximate statement of the total for the week to Aug. 2, makes it 1,935,000 bushels.

There was no increase at St. Louis in the week to July 26, but its receipts then were nearly six times its June average; but Toledo received 4½ times as much as the week before, and the total wheat receipts of the Northwestern markets were 40 per cent. more than the week before, 84 per cent. more than in the week to July 12, and 129 per cent. more than the weekly average in June. There is an increase at Chicago, but it is so small as to indicate that very little of the new wheat has gone there, its receipts being less than 11 per cent. of the whole, while St. Louis and Toledo together have 58 per cent. The very low rail rates have doubtless prevented shipments to Chicago from points far south of it, where most of the winter wheat is grown; shipments by rail directly through Chicago would be reported as Chicago shipments unless they came via St. Louis or Milwaukee. So far there is no accumulation of stocks of wheat at the Northwestern markets, but the contrary. Even in the week to July 26 their shipments were a sixth more than their receipts, and during the four weeks ending July 26 their shipments have been 5,101,641 bushels, against 3,735,573 bushels of receipts, and the total stock at the markets as far west as Toledo was then but 3,006,589 bushels, which is less than two weeks' shipments.

The effect of the new crop is seen most plainly in the wheat receipts of Baltimore, though for two weeks New York also has had much larger receipts than before. The average weekly total receipts of wheat at the several Atlantic ports in June, and their receipts each week since have been:

	Av. in June.	July 5.	July 12.	July 19.	July 26.	Aug. 2.
	949,302	1,054,213	682,288	1,729,764	3,229,779	4,157,219

The last three weeks show the beginning of the movement of the new crop, the week to July 19 having receipts 80 per cent., and the following week receipts 240 per cent. above the June average, while last week's receipts were 4½ times

that average. Meanwhile the receipts in New York and Baltimore were:

	Av. in June.	July 5.	July 12.	July 19.	July 26.
N. Y.	486,752	604,673	111,628	1,186,217	1,204,827
Balt.	248,896	236,443	405,774	437,921	1,003,280

In June the receipts at Baltimore were little more than half as great as at New York; in the week to July 26 they were but one-sixth less than the New York receipts and more than in the whole month of June. As we said last week, this is the ordinary course of things; that is, wheat receipts after harvest increase first and fastest at Baltimore, though much earlier in some than in other years, depending upon the harvest and the foreign demand—which may be said of the whole movement, indeed. Thus, in 1881 the Baltimore wheat receipts increased but little until August; in 1882, a year when a large crop succeeded a light one, and consequently the new wheat was needed early, the Baltimore receipts began to increase in the last week of June, and in the third week of July they were twice as great as in the whole of June, and in the fourth week three times as great. Last year, though the crop was light and Europe was well supplied, the Baltimore receipts began to increase in the second week of July, in the fourth week were 623,000 bushels, against an average of 142,500 in June; and in the second week of August were 1,012,000 bushels—nearly the same as in the fourth week of July this year, and nearly equal to its largest receipts that year.

But though the new wheat movement has begun, its proportions are not very great, as compared with some past years. Thus the wheat receipts of the eight Northwestern markets for the week to July 26 have been:

	1880.	1881.	1882.	1883.	1884.
	3,456,718	1,711,101	3,986,077	938,932	1,385,641

Thus the receipts this year, though 47 per cent. more than last year, were less than in any of the other three, and little more than a third of those of 1882 or 1880. And the Atlantic wheat receipts for seven years have been in this fourth week of July:

Year.	Bushels.	Year.	Bushels.
1878.	2,339,292	1882.	3,804,526
1879.	5,291,821	1883.	1,148,676
1880.	5,227,824	1884.	3,229,779
1881.	3,027,263		

The receipts this year are nearly three times as great as last year and a little greater than in 1881, but 11½ per cent. less than in 1882, 38 per cent. less than in 1880, and 39 per cent. less than in 1879.

If, as supposed, the crop this year is about as large as in any other, there would seem room for a great increase in the wheat movement. But, in fact, that part of the crop which is now harvested and can be marketed at the above ports is not exceptionally large. Only winter wheat is in condition to market, and the only state on this coast in which the crop is actually large is Kansas. The other five Western states which usually afford the larger part of the crop marketed on the Atlantic coast, by the most liberal estimate have produced 161 million bushels this year, against 118 last year, 138 in 1881, 201 in 1882, 223 in 1880, and 205 in 1879. Including Kansas, giving the latter state a most extravagant estimate (as it seems to us), the wheat production of the six winter-wheat producing states for six years has been, in millions of bushels:

1879.	1880.	1881.	1882.	1883.	1884.
222	243	158	234	145	210

It appears from this that notwithstanding an increase of nearly 40 per cent. over last year, there is less of the wheat now harvested than in 1882, 1880 and 1879. The fact is that an exceptionally large part of the wheat crop this year is spring wheat, which will not come forward much until September, and another large part is on the Pacific coast, which will not increase the movement here. Thus we shall hardly expect to see the receipts at the Northwestern markets or those of the Atlantic ports assume the proportion of other years of abundant yield until later in the season, if at all, and those interested in the traffic of the country and the railroads should bear this in mind.

#### Effect of Subterranean High Temperature in the Gotthard Tunnel.

A higher temperature was encountered in the Gotthard Tunnel than in any other work of the kind, though much less, we believe, than at great depths, as in some of the Nevada mines. In the Mont Cenis Tunnel the maximum reached was 85 degrees Fahrenheit, and only for about 1,600 ft. of the centre was it as high as 84. In the Gotthard, for some three miles of its length, beginning 2¾ miles from the south entrance in January, 1878, and 3¼ miles from the north entrance in May, 1878, the temperature reached 84 degrees, and Feb. 20, 1880, when the tunnel was opened through—in winter in the highest Alps—the average temperature was 88 throughout the three miles. It often reached a maximum of 95 degrees, but usually was not more than 90½. The air was rarified and saturated with moisture, the amount being six to nine times as much as in the outer air.

The effect on the workmen was shown by the following symptoms: Pallor, a yellowish-green color, spreading from the face over the whole body, indisposition to take nourishment, constipation alternating with diarrhoea, inability to endure muscular effort, palpitation of the heart, weakness, vertigo, catarrh of the organs of respiration and digestion. The number of sick reached the high proportion of 60 per cent. of the whole force; of these, 30 to 48 per cent. got well when they gave up work, while 5 per cent. were not likely to recover. Horses as well as men suffered in the tunnel, and with similar symptoms.

The effect of this was to compel an increase of 25 per cent. in the daily wages, a reduction of the hours of labor from 7 to 5 per day, and consequently an increase of 100 to

200 per cent. in wages for the same amount of work as was done in the first sections of the tunnel. Further, the amount of work performed daily was reduced, increasing the interest by delaying the opening of the work, and it became difficult to keep up the force at all, as the workmen on the average left after working two months.

It has been calculated by a scientific authority (Dubois-Reymond) that life cannot be sustained in a temperature 122 degrees where the air is saturated with moisture, and it is thought probable that labor becomes impossible in a temperature of 104 degrees, and the surgeon of the Gotthard Tunnel believes that the limit of subterranean labor was reached there.

In consequence of the experience in the Mt. Cenis and Gotthard tunnels, Mr. Stockalper, in the *Revue generale des chemins de fer*, concludes that within a distance three miles from one entrance of the proposed Mont Blanc Tunnel a temperature of 122 degrees would be reached, that 3¼ miles from the entrance, where the tunnel would be 9,844 ft. below the surface, the temperature would reach 128 degrees, and that for nearly two miles it would be 115 or above, in which it is doubtful that men could exist, not to say work. He concludes therefrom that artificial means for reducing this temperature and drying the air must be resorted to if this tunnel is to be constructed, for which he proposes, among other things, working the drills with air compressed so as to exert a pressure of about 100 lbs. per square foot, the introduction of ice, the circulation of ice-cold water, the use of unslaked lime to absorb the moisture, electric lighting (to avoid fouling the air), electric or atmospheric locomotives in place of animal power.

It is, however, hardly probable that the work would be prosecuted if the difficulties should be so great. The proposed Simplon Tunnel would probably have a temperature but little higher than that of the Gotthard, and there is no such pressing need of additional tunnels between Italy and Transalpine Europe as to justify extraordinary expenditures for the construction of one, especially as those which are hard to construct on account of their atmosphere are also hard to work.

Chicago through and local eastward shipments of flour, grain and provisions for the week ending July 26 were 31,858 tons, and for the week ending Aug. 2 they were 24,423 tons, against 27,921 in 1883 and 19,269 in 1882. For six successive weeks the tons shipped and the percentage going by each railroad have been:

	June 28.	July 5.	July 12.	July 19.	July 26.	Aug. 2.
Tons.	3,374	6,163	3,429	3,809	3,527	3,410
Flour.	41,909	25,829	15,489	18,461	20,726	14,492
Grain.	11,564	7,781	6,925	8,629	7,905	6,512
Provisions.	50,347	30,773	25,534	30,896	31,858	24,423
Total.	100.0	100.0	100.0	100.0	100.0	100.0
C. & Grand T.	14.5	16.3	13.5	12.9	15.2	17.2
Mich. Cen.	13.4	9.6	8.3	11.8	10.0	9.1
Lake Shore	12.1	12.3	19.7	18.3	18.2	17.8
Nickel Plate	1.1	9.1	10.9	9.8	14.0	9.5
Fort Wayne	15.9	16.7	18.2	21.4	17.9	18.1
C. St. L. & P.	9.6	11.5	7.9	5.6	5.5	7.2
Balt. & Ohio	7.2	10.2	10.5	8.4	9.0	11.0
Chic. & Atlantic	16.2	14.3	14.0	10.8	10.2	10.1

The week ending July 26 was the first of the 25-cent rate, which tended to decrease shipments, and it is doubtless because of the large shipments billed the week before that there was then a slight increase over that week, wholly in grain. Last week, when we may suppose that all the shipments were billed at the old rate, the shipments were 23 per cent. less, and were the smallest of the year. This is usual at this season, however, when rates are maintained, and the shipments were but one-eighth less than last year, at the same rate, and were 27 per cent. more than in 1882, when the grain movement was much heavier.

The Grand Trunk has had an exceptionally large proportion of the shipments since the rates were advanced, and the Fort Wayne has maintained its position well. The two Pennsylvania railroads together carried 23.4 per cent. of the whole in the first and 25.3 in the second week; the three Vanderbilt roads 42.2 in the first and 36.4 in the second. A considerable increase in the Chicago shipments is hardly to be looked for until September or the end of August.

The well-known firm of English signal-makers, Mosses, Saxby & Farmer, is to be turned into a stock company under the title of "Saxby & Farmer, Limited." The capital is fixed at one million dollars. Their signals, system of interlocking, etc., are widely used and approved in England and Belgium, and to some extent in France, India, Australia, and other countries, and the firm has a world-wide and well-deserved reputation. Their patents in this country are owned by the Union Switch & Signal Company of Pittsburgh, Pa.

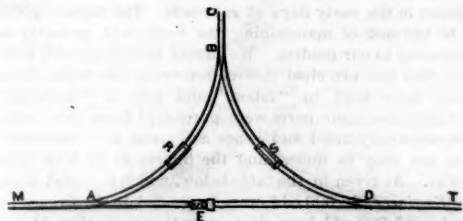
A locomotive-type boiler exploded lately, killing several persons. On examination it was found that the safety valves had been purposely jammed hard down, and the pressure gauge showed only 140 lbs. pressure when the actual pressure was 280 lbs. to the square inch. When a pressure of 800 lbs. was put on a standard gauge, the gauge of the exploded boiler showed only 179 lbs. Probably this is an uncommon if not an extreme case; but few pressure gauges are reasonably correct after a few months' use, and it is important to compare their indications periodically with those of a standard gauge, the latter being tested by a column of mercury. Safety valves are frequently altered and adjusted when the real fault lies in the pressure gauge.

A locomotive runner from the breezy hills of Vermont, acting upon the assumption that there is a demand for "light reading" at this season, sends us the following



"knotty" problem. Although it has very simple parts, it has, our correspondent avers, been the means of staggering some brilliant minds, and has used up the midnight oil of several "first-class" conductors and yard-masters, so we present it as a "theme for the thoughtful."

In the plan,  $M$   $T$  is the main track, of indefinite length,  $A$   $B$  and  $D$   $B$  are side-tracks, forming a "Y," and the piece of track  $B$   $C$  is just long enough to hold one car.  $R$  is a



refrigerator car and  $S$  is a car of live-stock. The problem is to take the engine ( $E$ ) and cause  $R$  and  $S$  to exchange places, the engine being returned to its starting point after the job is done; the whole to be accomplished without the aid of flying switches, ropes or other aids, and the engine not to be turned around.

#### Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

*Atchison, Topeka & Santa Fe.*—The *Wichita & Western Branch* is completed from Wichita, Kan., west to Kingman, 45 miles.

*Cape Fear & Yadkin Valley.*—Extended from Lumber River, N. C., southeast to Shoe Heel, 16 miles.

*East & West, of Alabama.*—Track is laid on the gap from Cross Plains, Ala., west to East & West Junction, 8 miles, connecting the two divisions of the road.

*Minneapolis, Sault Ste. Marie & Atlantic.*—Track laid from Cameron, Wis., east 5 miles and west 5 miles.

*Oregon Railway & Navigation Co.*—The *Baker City Branch* is extended from Meacham, Or., southeast to La Grande, 25 miles.

*St. Paul, Minneapolis & Manitoba.*—The *Portland Branch* is extended from Portland, Dak., north by west to Larimore, 30 miles.

*Terre Haute & Indianapolis.*—The *Terre Haute & Logansport Division* is extended from Plymouth, Ind., north to Lakeville, 13 miles.

This is a total of 147 miles of new railroad, making 1,859 miles reported to date for the current year. The total track reported laid to the corresponding date for 13 years past is as follows:

	Miles.		Miles.
1884.....	1,859	1877.....	845
1883.....	2,796	1876.....	1,145
1882.....	5,607	1875.....	504
1881.....	3,115	1874.....	913
1880.....	2,631	1873.....	1,996
1879.....	1,273	1872.....	3,372
1878.....	947		

These statements include *main track only*, no account being taken of second tracks or other additional tracks or sidings.

#### NEW PUBLICATIONS.

*Mechanics and Engineers' Pocket-Book.*—By Charles H. Haswell. New York: Harper & Bros.

This venerable pocket-book—in a certain sense the father of all the American pocket-books of its class—has now reached its 45th edition, and in so doing has expanded from the seven hundred and odd pages of the 42d edition (which was itself much expanded from former editions, and was reviewed in the *Railroad Gazette* for April 21, 1882) to 925 pages. The index in this new edition has grown to 24 closely printed pages, as against 12 in the 42d edition, and it goes without saying that much new matter has been added, as well as much more care used in indexing, for which latter, as in most technical books, there was abundant room. Even yet, however, the index is far from what it should be, a notable defect being an entire absence of cross-references; so that, for example, to find out something about the laws of motion of ships through water, one may look under "hulls" or "ship-building," or "water" in vain, but if he happens to look under "naval architecture" he will find 20 pages.

The volume has been entirely reset and the tables are now printed in the old-style type which is so justly given preference in all modern table books. The general arrangement of the tables, however, has not been altered, and they are scattered irregularly through the volume as before.

The added matter seems to be distributed quite uniformly through the volume, except that the departments more particularly appertaining to railroad work have not been very greatly strengthened.

The final result is certainly an extraordinary accumulation of miscellaneous information, which no one, we think, having much to do in any way with mechanical and engineering problems, can afford to be without. The probability of needing much of it is remote, and, on the other hand, there is a certainty of any railroad man, at least, needing to know a great deal which is not to be found in the volume. But this is to be expected. In collecting such a vast amount of material it is not reasonable to expect that everything included shall be worthy of insertion, and certainly it would be highly unreasonable to complain that every subject is not treated as fully as might be desirable.

Nevertheless, although a large latitude should be given in both directions, we have a right to expect that nothing con-

spicuously false or antiquated, nothing which to the ignorant "searcher after truth" is something worse than useless, since it tends to lead him astray, shall be admitted into such a volume; and in this respect the volume is open to grave censure, for it contains an unconscionable quantity of no-such-things. Not to mention such little matters as that B. C. 4004 was the year of the creation of the world (although Julius Africanus thought it was Sept. 1, 5508, etc., etc.), of which we might give a long list, it will be enough to specify the treatment of two important subjects, heat and friction. It gives one almost the feeling of finding some venerable relic of a past generation to light upon such a Rip Van Winkle-like sentence as this, at the very beginning of the article on heat:

"*Caloric* is usually treated of as a material substance, though its claims to this distinction are not decided [italics ours]. The strongest argument in favor of this position is that, if its power of radiation," etc., etc., etc.

We must in justice add that the definite and tabular treatment of the subject is not so bad as this opening would indicate, and that most of the working details given, although by no means all are modern, are sound and unobjectionable; but the same cannot be said of the treatment of the subject of friction, which is throughout based upon the hypothesis that "M. Morin's experiments afford the principal available data for use," and is almost wholly behind the age. The same may be said of what is given on the subject of "railways." The first four pages are a lot of miscellaneous data from Molesworth (mostly), which are entirely and even absurdly inapplicable to American practice. Without expecting a merely human man to be entirely familiar with so many different branches of knowledge as are included in this book one certainly has a right to expect him to be familiar enough with his subject to strike his pen through such trash as this, or to find some one who is, before sending his book to press.

The most practical part of the volume, as respects railroad practice, is an article on the "operation of locomotives," contributed by Mr. O. Chanute, but the closing example given therein, of the tractive power of an engine on a grade, is, incorrectly computed, in that no allowance is made for the grade resistance of the engine and tender. Instead of hauling 20 cars, the engine under the conditions assumed will haul only about 17½. The same error runs by implication through the two preceding examples, for although the computations give the *tension on the draw-bar* correctly, yet they do not give the *total resistance to traction* correctly, which is apparently the point aimed at; since the latter alone gives means for determining whether a given train will "require a consolidation locomotive to haul it." In fact, the first example is, whether from this cause or otherwise, one of an entirely impossible performance; at least we take it so, for it seems certain that no engine ever has or can take a train of five cars, weighing 136 tons, up a 0.6 per cent. grade, 32 ft. per mile (in effect, including curvature), at 60 miles per hour, without losing speed. With the assistance of momentum, of course, it would take it up a 5 per cent. or a 10 per cent. grade without any steam at all—to a height of 120.37 ft., when it would come to a stop. Had these considerations, possibly, been more considered, it would have led to some modification of the formulæ themselves, for the latter cannot be considered, we think, as consistent with each other or with observed facts in operation. This will be made somewhat clearer by reducing the formulæ to a simpler and more usual form, which we do by assuming that a passenger car weighs 25 tons, an empty freight-car 9 tons, and a loaded freight-car 20 tons, following very closely the assumptions made in the example. We then obtain the following formulæ for the *total resistance* in pounds (behind the tender) of a train weighing  $W$  tons at  $V$  miles per hour:

$$\text{Passenger train, } R = \left(5 + 0.0072 V^2 \left( \text{i. e. } \frac{V^2}{130} \right) \right) W + 0.27 V^2$$

$$\text{Loaded freight train, } R = \left(5 + 0.00315 V^2 \left( \text{i. e. } \frac{V^2}{317} \right) \right) W + 0.252 V^2$$

$$\text{Empty freight train, } R = \left(5 + 0.007 V^2 \left( \text{i. e. } \frac{V^2}{143} \right) \right) W + 0.252 V^2$$

If we apply these formulæ to speeds of 15, 30 and 60 miles per hour, we get the following curious results:

	Resistance in lbs. per ton.		
	Miles per hour.		
	15	30	60
Resistance per ton of passenger train.....	6.9	12.7	35.8
" " loaded freight.....	5.8	8.4	18.6
" " empty freight.....	6.7	11.9	32.5

It would thus appear that a loaded freight car has an enormous advantage in resistance over either an empty freight or a passenger car, and that even the empty freight has a little the best of the passenger. But this is plainly not so, and there must consequently be some defect in the manner of deducing the formula, which we take to be that it is tacitly assumed in the article, without proof or discussion, that there is no other velocity-resistance than the air-resistance; that there is no augmentation of the frictional resistance from oscillation and concussion. This we take to be not only not proven, but almost certainly erroneous, and it is certainly contrary to the conclusions of most other experimenters on the subject. To show how doctors differ: Mr. Wm. H. Searles, in his "Field Book," gives a formula, stated to be deduced from some hundreds of discussions and tests, which, when analyzed—it does not appear upon the surface—assumes the velocity-resistance to be all oscillatory resistance; and this formula gives a really wonderful approximation, for a single simple formula, to the actual results of practice with all classes of trains at all sorts of speeds.

While on the subject we may note a seeming inconsistency

in the coefficients of adhesion given. If the difference in coefficient between a rail "very dry" and "very wet" is in Europe as 0.30 to 0.25, why is it in America as 0.33 to 0.25, being higher here than in Europe when the rail is "very wet," and lower than in Europe when the rail is "very dry"? We know of no authority for so high a coefficient as either of those given for unequalized European engines—certainly none is given—nor for any such drop as from ¼ to ⅓ between a rail "very wet" and a rail "very dry" in America. As the coefficients are given side by side, the discrepancy seems strange.

We should be glad to speak of many other points which we have noted, but can give up no more space. We cannot summarize our conclusions better than by stating that it is a book to own, but not a book to trust. It is impossible to do so safely in matters of moment; the mixture of old and new and true and false is too great. The neophyte who does so and airs the statement in double lead (p. 640), that "steel is a compound of iron and carbon in which the proportion of the latter is from 1 to 5 per cent." will simply make an ass of himself; but he has only to turn back to p. 637 to learn better. That such a statement should pass unquestioned through 45 editions (when a merely verbal correction was made in the same sentence in preparing the last edition) shows that the work has not been carefully edited; and that is its great fault. The statement, perhaps, was supposed to be true in 1800 and little or nothing, but it isn't true any longer. Still, the book is a great storehouse of tabular and other information.

#### Character of Men Fitted to Handle Money.

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[FROM MARSHALL M. KIRKMAN'S FORTHCOMING BOOK ON THE "THEORY AND PRACTICE OF COLLECTING RAILWAY REVENUE WITHOUT LOSS."]

The number of men who have more or less to do, directly or indirectly, with the handling of a railway company's money, is much greater, relatively, than is generally supposed. The number of responsible heads is not great, but there is subordinate to them upon every road a large number of assistants, clerks, cashiers, ticket-sellers, baggage-masters and collectors, every one of whom handles more or less cash, and must therefore be taken cognizance of if we would understand the subject fully. It is not desirable or practicable perhaps to disturb the authority of the agent over employes of this character or relieve him of the responsibility for the acts of those under him. Every man, however, who accepts pay from another is directly responsible to him. The fact that he acts under a person higher in the confidence of the employer than himself does not lessen the responsibility. It is less direct in its expression, that is all. This fact ought, therefore, not to be overlooked in deciding who shall furnish security and who shall not. The burden (if the giving of security may be called a burden) must be proportionate to the position or wages received by the operative. The mere fact that one operative is called a clerk and another an agent should not relieve the former of his inherent accountability to the employer, especially as in rendering that accountability he relieves the agent of a burden not properly belonging to him. The pay of cashiers, ticket-sellers and collectors is often greater than that of agents and others who rank even higher. It would, consequently, in such cases, be improper to fail to exact from the clerk or cashier security for his acts, while security was exacted from the agent for the faithful discharge of similar responsibilities. The practice of exacting security from all will, moreover, in a measure weed out the poor employes, and in so far as it does this it will heighten the self-respect of those who remain. The source from which men occupying the responsible office of agents upon our railroads shall be drawn is one of great interest to them and of great importance to the companies themselves. The practice indulged in (and unavoidably so in many instances) during the earlier history of railroads, of picking up men here and there without much, if any, reference to their education, experience, habits or fitness, and making agents of them, is happily growing less frequent. It is no longer necessary. Such men, it is manifest, are not so likely to acquire the habit of understanding their duties fully and performing them fitly as those who had grown up in the service. They lack the primary knowledge, the actual acquaintance with the small details of the business that can only be acquired in subordinate positions. It is from the ranks of men filling the inferior positions, consequently, that the agents should be drawn. Here is the natural recruiting ground for officials of this character. In these minor offices the employes acquire knowledge of the minutiae of the business both from practice and observation. It is here, under the eye of the superior, that the habit of handling money faithfully and skillfully is acquired. This habit they carry with them when appointed to independent positions. Upon every railway there is a small army of men of this character; they may not be known always to the general officers, but their character and ability is well understood and appreciated by their immediate superiors. And it is from these superiors that recommendations for minor agencies should be invited. All minor agencies should be filled from the class of operatives we have mentioned, just as all the superior agencies should be filled by men who have occupied the minor agencies. We thus get the familiarity with the business that is necessary, and at the same time secure those habits of integrity and practice that are so essential. Men are greatly strengthened in the exercise of honest practices by efficient checks and safeguards. These safeguards, and the instinct in every man to do right, form and strengthen the habit of honest practice. After a man has occupied for a length of time



a position of trust requiring him to handle money, he is not likely to prove unfaithful. To be sure there are exceptions to this rule, but they are, relatively, very few, and are occasioned by a conjunction of circumstances that do not often occur. A man is unfortunate in having a weak character, or his ability to resist temptation has been undermined; he requires the use of money for a particular purpose or to satisfy extravagant family expenditures; he has become dissipated, is infatuated with some woman, or has insensibly acquired habits that demand special and exceptional outlay. Such a conjunction of circumstances as these produce defaulters. The men are not rogues; far from it; they are simply weak. If we would prevent the weak from falling and sustain the strong, a minute, constant and intelligent supervision of their affairs must be exercised. Men must not only be selected wisely; they must be governed wisely.

In investigating the character of those intrusted with the handling of money, the age and experience of the person must be especially considered. It is impossible to believe that young men, without experience or principles fixed by habit and association, can understand or appreciate the nature of a trust as fully as those of more mature years whose characters have been molded and solidified in the actual conduct of business. Except in extreme cases (and these should only be temporary) no one should be appointed to a position where he is to handle money, unless under the immediate personal supervision of an older and more experienced person, who has not by age and previous experience acquired personal knowledge as to the nature of such a trust. Honesty is with many persons merely a habit. They observe its faithful exercise upon the part of others, and gradually acquire the habit themselves as they are called upon from time to time to perform minor offices of this nature. Those whose characters are formed in this way prove trustworthy, but the process requires time. Where young men are appointed to handle money, whom neither age, experience, observation nor reflection has taught the necessity or habit of exercising their office with fidelity, especial and marked vigilance should be exercised in their supervision.\*

A recognition of the fact that experience and education is the only proper test of fitness has induced railway managers in some instances to forbid the employment as agents of persons under age. Such a rule will, however, frequently involve injustice, but it is, in the main, right and proper, as it excludes those whose habits have not become reasonably well grounded or about whom little is known. There are, however, many cases where a man who has not yet become of legal age, but has filled such responsible places as ticket-seller, collector and cashier, who is much better qualified and in every way more worthy to fill the office of agent than a man much older who has not had his experience and discipline. The rule should therefore not be to exclude men because they are young, but to put only those in responsible places whose previous experience has been such as in a measure to fit them for the performance of their duties and afford at the same time a reasonable assurance that they will be faithful as well as competent. If a fixed age is to be established, under which men will not be appointed as agents, probably 21 years is low enough.

It will frequently occur in the operations of business, that tried men possessing the necessary qualifications cannot be procured for the salary offered. In such cases temporary recourse should be had to those who have been a considerable time in the service and about whose character something is known, even though additional expense is temporarily incurred thereby. Such a course will prove economical in the long run.†

#### THE TRAVELING AUDITOR AND WHAT HE MUST BE.

In order to secure a connected and intelligent supervision over the station accounts, the accounting officers of our railroads have found it necessary to appoint an expert and trustworthy official to perform this work under their direction. At first this duty was performed spasmodically, if at

\*The force of this was especially impressed upon me some time since in the case of a young man, 18 years old, who was appointed to take charge of a station in the West. His familiarity with the telegraph was one of the factors that secured his appointment, though he had the necessary knowledge otherwise to perform the duties of an agent. He conducted the affairs of the station very fairly for a short time, when, suddenly and without any intimation, he took all the money he could get hold of and decamped. When overtaken and brought back he pleaded his youth in extenuation, and it was evident that he had not realized the extent of his crime nor how destructive it was to his standing in the community and his future usefulness. He was tempted to take the first dollar he collected. He resisted, but the temptation grew upon him from day to day without his being fairly conscious of the fact. Had he been an older or more experienced man he would have been able to resist it, as he had no particular use for the money; as it was he succumbed, and without any premonition whatever he suddenly seized all the available cash and fled. If he could have been carried along in a subordinate capacity for a few years, and had thus become accustomed to the exercise of offices of trust of a minor character, I have no doubt he would have made a reputable and trustworthy man.—M. M. K.

†I have seen this illustrated many times. In one instance a young lad of unusual promise, but without previous experience in filling responsible positions, was appointed agent. For a time he did very well, but soon the remittances became less frequent and grew smaller without any known reason. Finally they ceased entirely. Upon investigation the fact was elicited that he had launched into every species of vice that money suggests or could procure; he had even gone to the length of giving away tickets of the company, and in many instances had sold them at ridiculously low rates to his friends. He was not an especially vicious or weak lad, but the sudden possession of so much money and power, without previous experience, simply made him mad. I remember an instance where a young man, 19 years old, who was appointed to an agency under similar circumstances, retained every dollar that he collected from the minute he was installed, and when called upon made all sorts of excuses, and upon being pressed for the amount, attempted to run away. If these young men had first been employed in some minor office of responsibility where they would have been under the supervision of older and more experienced officials, it is possible that they would have made men who would have filled the office of agent without scandal to the company or particular discredit to themselves.—M. M. K.

all, by some clerk or minor official at the general office. No particular person was assigned to the work. Almost any one was thought sufficiently capable. The work was not considered to be imperative or pressing. With the multiplication of offices and the increase of business, however, it has been found necessary to delegate a particular person to discharge this duty. This official is generally known as a Traveling Auditor. The office he fills is an important one, and the efficient discharge of its duties indicates capacity. To fulfill the functions of his office creditably he must be a man of more than average attainments. He must possess a discriminating knowledge of men, be truthful and frank in his statements, well grounded in the general principles of accounts, and must possess an especial and technical knowledge of the freight and passenger business. He is the official representative on the line of the officer or officers in charge of the accounts and local finances. It is through him that this officer (if one officer has general charge) comes in contact with each agent and employee; through him he personally looks into the minutest affairs of the various agencies, and keeps advised of the condition of the station accounts and of the fitness of those in charge. In order to make the examinations as expeditious and as unobtrusive as possible, the Traveling Auditor must possess a thorough knowledge of station affairs, the ticketing of passengers, the loading and unloading of freight, the collection of moneys due the company, the routine of freight and ticket accounts, and all the miscellaneous business carried on more or less extensively at every station. He must not only possess a knowledge of accounts, but must be expeditious in the discharge of his duties, so as to occupy as little time as possible in his examinations. He must be energetic and industrious beyond the capacity of ordinary men. Coupled with these characteristics he must be polite in his manner and must possess the faculty of amiability that will enable him to ascertain what he desires to know with the least possible offense to those with whom he comes in contact. He must have, moreover, that resolution to perform the whole function of his office which only intense interest in its affairs will engender. His enthusiasm must be of that order that while he believes in the absolute rectitude of every employee, nevertheless the interests of the company, and the interests of the employee as well, require that nothing shall be taken for granted, but that every device, resource and check necessary to demonstrate the absolute correctness of the accounts at each and every station shall be scientifically and exhaustively applied. In other words, while he believes every man to be honest, and speaks of him and treats him as if he were honest, his examination is as searching and minute in its character as if he were convinced that there was something wrong somewhere which only such an examination would elicit. Traveling auditors, moreover, are required to be particular not to accept favors from agents and others that will embarrass them in the discharge of their duties, and their financial affairs must be in such shape as not to require them to borrow money or run in debt.\*

The rules, regulations, directions, observances, hints and experiences as recounted herein, are intended as a guide and suggestion to traveling auditors, and in the event that they are not properly observed, or if necessary, or where the interests of the company require it, or the rules and regulations make it obligatory, he should call the attention of the proper officer to the same, so that he may take such action as the case seems to him necessary.

#### THE VALUE TO UPRIGHT AGENTS OF THE INVESTIGATIONS OF TRAVELING AUDITORS.

The investigations into the affairs of agents from time to time too often engender unpleasant feelings upon the part of agents. Conscious of the absolute rectitude of their acts, they look upon the minute and searching examinations of their affairs by the Traveling Auditor as a reflection upon their integrity as men. They do not stop to realize that they are part of a great machine, each atom of which is held in place by just and necessary safeguards instituted for the protection of the employer and necessary for the procurement of efficient agents and the enforcement of necessary discipline. The examinations of the Traveling Auditor are entirely impersonal and ought to be so considered. They are embarrassing, doubtless, sometimes to the agents, but not more so than are other vexations of business. Moreover, when the examinations are completed and the accounts have been demonstrated to be correct and the agents to have been efficient in the discharge of their duties, it is impossible to believe that the latter can feel otherwise than gratified. It is by examinations of this character, pursued without reference to place or person, that a company is able to separate the efficient and trustworthy from those who do not possess these qualities. This fact should be borne in mind by agents, and instead of impeding the progress of the Traveling Auditor or co-operating with him in a half-hearted manner, they should do all that they can to elucidate the affairs of the company for which they are responsible.

\*I have a case in my mind where a number of vicious agents found their opportunity through the impetuosity of a Traveling Auditor. His necessities induced him to borrow money of them, and in consequence of the favors thus accepted he placed himself in their power, and in doing so rendered it impossible to enforce the rules of the company against delinquents. The result was that those who were dishonestly inclined took advantage of the practical vacation of his office by the Traveling Auditor. Many shortages occurred, one of them exceeding \$18,000; others for lesser amounts. The trouble had its origin in the mischievous propensities of the Auditor. Under cover of his position he practically levied blackmail upon the employees, or at least they looked upon him as such, and they retained it as impossible to company. If a Traveling Auditor expects to be able to secure respect for himself and for his office he must be careful to do nothing that will lower him in the esteem of those over whom he is called upon to exercise supervision.—M. M. K.

#### The Westinghouse Automatic Brake.

The following notes on the working of the Westinghouse Automatic Brake on the Northeastern Railway, England, are published in *The Engineer and Engineering* as communications from the Engineer of the line, Mr. T. E. Harrison. This gentleman is one of the oldest and most experienced railroad engineers and is one of the few survivors of the band of hard-headed north-countrymen who assisted George Stephenson in the early days of railroads. The figures given as to the cost of maintaining the brake will probably be interesting to our readers. We should have supposed, however, that the principal cost of repairing the triple valve would have been in "labor," and not in "material." Probably the repair parts were purchased from the brake company ready fitted and hence are given as "material." It is not easy to understand the figures as to hose pipe repairs. As given in the table below, which is copied from *The Engineer*, \$6,000 odd were expended in two years in repairing 5,000 odd hose-pipes, or rather more than \$1 per hose-pipe, which seems a small figure, though the number of hose pipes is very large. It would be interesting to know the average life and net cost of a hose-pipe in this country.

#### WESTINGHOUSE BRAKE.

Repairing and Maintenance of Brakes and Machinery for the two years 1882 and 1883, the Number of Vehicles being 2,029 Carriages, 637 Guards' Vans, Horse Boxes, etc.; in all, 2,666.

Quantity.	Cost.		Total for two p. vehicle	Avg. p. year.
	Material less old fitting materials.	Labor in repairs.		
<b>Cylinder Parts:</b>				
Cylinder.....	4	\$77.60		
Pistons.....	1	9.70		
Covers.....	9	17.46		
Spring pins.....	2	10.18	\$29.26	
Washers.....	5	31.53		
Air gauge.....	2	9.70		
				<b>Cents</b>
Reservoir and union.....	1	\$156.17		\$185.43 8.41
Triple valve.....	1	8.48	73	9.21 1.77
Release valves.....	10	388.00	10.43	398.43 7.19
Cocks.....	14	30.55	1.70	32.25 .60
Cross-head.....	51	69.42	7.94	77.36 1.37
Miscellaneous Parts:	1	.61	.06	.67 .01
Truss rods, piping, etc.....		97.94	14.80	112.74 2.13
Oil (lubricating).....		45.37		45.37 0.83
<b>Total Brake Parts.....</b>	<b>241</b>	<b>\$787.74</b>	<b>\$64.92</b>	<b>\$852.66 15.81</b>
Hose pipes and mounting.....				
ing.....	5,392	5,918.33	324.07	6,242.45 114.00
Reversing pistons.....			1,346.08	1,356.78 25.15
Wages, men, testing.....			970.00	970.00 18.00
Salaries, inspectors, etc.....			2,891.56	2,891.56 53.67
<b>Total.....</b>		<b>\$6,706.12</b>	<b>\$5,606.03</b>	<b>\$12,312.75 226.66</b>

\*As it was thought desirable to change all the hose pipes that had been damaged when altering their position, the number here charged is above the average, to the extent of from one third to one-half. The above figures show conclusively that there is great economy in the maintenance of the Westinghouse brake.

It is stated that the examination of each pump and governor requires about 4½ days work per year, but the cost of this is apparently not included in the table.

#### Notes on the Westinghouse Brake and on some Regulations in working it.

A van has been specially fitted up for instructing the enginemen and firemen in the use of the Westinghouse brake under all circumstances. The van contains all the apparatus necessary for a train of eleven carriages, and pressure indicators are attached to show the varying pressures in the reservoirs, cylinders and pipes. An intelligent engine driver takes the van to the different stations where men are located, and they are instructed in the use of the brake, the men taking a great interest in it, and when fully understanding its working they are passed, and their names entered in a book. A great improvement in the working of the trains was observed after the men had been instructed.

**Hose Couplings Bursting.**—The number of failures of the hose couplings is chiefly to be attributed to their position on the carriages having been changed, necessitating the hose being removed from the iron ends by the following process: The hose is soaked for from 15 to 30 minutes in nearly boiling water, and then each end of the hose is put into a machine with movable heads, worked by levers, and forcibly pulled off the iron nipples, and invariably more or less damaged. The hose couplings so damaged have now been nearly all removed and replaced by new ones.

**Triple Valves.**—All triple valves are examined and cleaned every three months, and it is probable that this examination will turn out to be more frequent than is necessary; the time occupied for the examination and cleaning of each triple valve is seven minutes. A little water is sometimes, but not often, found in engine triple valves, and in those on vehicles worked next to the engine. So far triple valves requiring repairs amount to about 1 per cent. per annum.

**Brake Cylinders.**—Brake cylinders on engines and carriages are at present examined every three months, a little paraffin oil is put in and the pistons are turned round, so that the leather washers may be lubricated and wear evenly. This process takes 30 minutes. The leather washers in the cylinders seldom require renewing, except in some cases on engines where they come in contact with heat.

**Main Reservoirs on Engines.**—Water accumulates in these reservoirs at the rate of from one to two gallons per week, depending on the state of the atmosphere. The time occupied in clearing off this water by a plug is five minutes. If these main reservoirs be kept moderately free from water, there is very little accumulation of water in the reservoirs in the carriages or bottom caps of triple valves. The larger the main reservoirs the better, and they ought not to be less than 9 to 10 cubic feet capacity.

**Dirt.**—It is most desirable that dirt should be kept out of the working parts of the brake as much as possible, and this depends chiefly on the lubricant used in the air pump, and if a little pure paraffin oil is used once in two days, very little accumulation of dirt and consequent clogging of the different parts of the brake will take place.

**Governors.**—The automatic governors now in use on all engines on the Northeastern Railway, though little used on other lines, have been proved to be of great importance in keeping up a uniform pressure; they require cleaning every two or three months, the time occupied being about one hour.

**Donkey Pumps.**—The lower or air part of these pumps, and the air valves and case, require cleaning every three months, the time occupied being about half an hour; the pump itself requires a complete examination and cleaning once every nine months, taking two men's time one and a half days.

**Driver's Valves.**—These valves require cleaning every two or three months, and take about one hour. All the cost of labor in connection with the examinations and



cleaning above referred to is included in the accompanying table.

**Brake Blocks.**—The wear of brake blocks is common to all continuous brakes, and depends on the number of stoppages made by the brake. In the year 1883 the stoppages at stations on the Northeastern Railway were 2,863,756 and on the Brighton Railway it has been found that the additional stoppages from signal and other causes amount to 50 per cent. The cost of brake blocks for one year is:

Material.....	\$559	\$2,711
Labor.....	315	1,528
	\$874 08.	\$4,309

or 6½d. (13 cents) per vehicle.

The cost of repairs and maintenance of the pump, triple valves, reservoirs, and everything connected with the Westinghouse brake, for each engine with its tender for one year, taken on the average of two years, amounts to (\$15 95) £3 5s. 9d. The brake blocks for each engine with its tender for one year cost £1 18s. 10d. (\$9.42).

An analysis of the returns of delays made to the Board of Trade by the Northeastern Railway Company gives the following results for the year 1883:

	No. of cases.
Negligence of men and neglect of regulations.....	21
Breakage of parts of brake gear, such as cocks, pipes, swan necks.....	33
Leakage from various causes.....	7
Triple valves, parts of, being out of order:	
Northeastern carriages.....	4
North British carriage.....	1
	5
Total number of cases.....	66=1.27 per wk.
Cases of hose-pipe bursting.....	92=1.77 "
Total.....	158=3.04 "

Attention is directed to the few cases of delay from the triple valve being out of order. It may here be remarked that the above delays are not attended with danger. Though called "failures" they are in most cases the best proof of the reliability of the automatic brake acting as a "tell-tale" to call attention to any slight derangement, and they will certainly be gradually and greatly diminished in number, particularly in the bursting of the hose pipes.

The whole result is a delay to one train every other week day of three to five minutes out of all the trains working on the Northeastern system, not as great a delay as occurs every hour under the working of the block system. The returns of failures made by different companies for the half year ended Dec. 31, 1883, vary a great deal, in one case being relatively more than six failures to one on the Northeastern.

**Efficiency of the Westinghouse Brake.**—It must not be forgotten that the great object of the introduction of continuous brakes was not for the mere stopping of trains at stations, but that it might be used as an emergency brake to prevent accidents, and every day's experience shows more clearly the efficiency of this brake for this purpose and in diminishing the extent of damage when accidents do occur, and it is generally liked by all engine drivers who have used it. It has been found especially useful for working steep inclines, of which there are many on the Northeastern system, in some the gradients being as steep as 1 in 37 (143 ft. per mile).

The incline on the main line to Whitby, five miles long, with curves of fifteen chains (990 ft.) radius, and the gradient less than 1 in 50, was formerly worked with a train of carriages fitted with Fay's brake.

The Westinghouse brake now works the trains over this incline at a speed of from 20 to 25 miles an hour under complete control, the brake being applied throughout the running in descending the incline at a uniform pressure. The "leak off" brake would be useless on such an incline. There does not appear to be any one point in the principle and arrangement in the Westinghouse brake, as now in use, requiring alteration, and it entirely complies with all the requirements of the Board of Trade.

**Automatic Brakes.**—The automatic brakes of all kinds in England, Dec. 30, 1883, exceed the number of non-automatic brakes by more than 50 per cent., and of the automatic brakes of all kinds in use more than 60 per cent. are Westinghouse brakes.

A comparison is given below of the number of Westinghouse brakes in use and actually ordered on the 30th of April, 1884, and on the 20th of July, 1880, the increase being remarkable.

Westinghouse Automatic Brakes, April 30, 1884.		Carriages and wagons.
	Engines.	
England.....	1,847	13,129
France.....	1,520	10,442
Continental railways and the colonies.....	1,219	5,571
United States.....	4,386	29,342
	7,167	33,723
Total.....	11,533	63,065
Return, April 20, 1880.....	3,277	13,502
Increase in 3 years and 9 months.....	8,276	49,563

\* Includes 11,251 wagons.

According to the last Board of Trade returns, there is not a single vacuum brake in use on any of the Scotch lines of railway.

The Westinghouse brake is becoming generally the adopted brake for the Continental railways.

## TECHNICAL.

### Locomotive Building.

The Chicago, Rock Island & Pacific shops in Chicago are building six four-wheeled tank engines for switching purposes. They have 15 by 24 in. cylinders, 44 in. driving wheels, and the others are 42 in. diameter of barrel.

On the evening of Aug. 4 a fire broke out in the engine room of the Baldwin Locomotive Works on Hamilton street, Philadelphia, and spread rapidly. The origin of the fire is unknown, although a watchman employed in the building says that it was struck by lightning. The fire spread very rapidly and was with difficulty controlled by the fire department, and the entire building in which it originated was destroyed. This building was three stories in height and was part of the structure erected by Matthias W. Baldwin in 1834. For some time past it has formed part of the boiler and machine shops of the present works. On the lower floors were a large number of valuable tools and in one of the rooms on the upper floor were stored a number of patterns which will be a serious loss. It is reported that the damage to the works was about \$150,000, which is largely covered by insurance. The boiler shop adjoining the burnt shop was somewhat damaged by water but work can be resumed in it in a short time. The progress of the work in the shops will not be seriously delayed by the loss of this building.

The Taunton Locomotive Works, in Taunton, Mass., last week delivered to the Old Colony road a new locomotive

with 18 by 24 in. cylinders and 5 ft. drivers. It is intended to run heavy local passenger trains.

### Car Notes.

Harris & Son, in St. John, N. B., are building two second-class passenger cars, 12 box and 56 flat cars for the Intercolonial road.

The Paige Car Wheel Co. is now filling an order for 800 33-in. wheels for the Northern Pacific Railroad and a number of smaller orders for both eastern and western roads. The company recently filled an order for 40 36-in. wheels for South American cars and reports that these wheels are being rapidly introduced and do satisfactory service, many of them having run over 200,000 miles without turning.

The Chicago, Milwaukee & St. Paul shops in West Milwaukee, Wis., are building four baggage cars 60 ft. long for the road.

Bowler & Co., in Cleveland, O., are running full time, turning out 80 car wheels a day, besides other castings.

The Illinois Central shops in Chicago have recently built 13 passenger cars for suburban service and 50 Tiffany refrigerator cars. They are now building a lot of 50 fruit cars.

The Youngstown Car Manufacturing Co., in Youngstown, O., is running its shops about half time.

The Old Colony shops in South Boston are building 20 box cars for the road and will soon begin work on 12 first-class passenger cars.

Since March, 1880, all renewals of car and engine truck wheels on the New York Elevated roads have been made with Allen paper wheels, and there are now 220 engines and 576 cars on these roads equipped with them, making a total of 5,408 wheels in use. The service on these roads is very hard on car wheels owing to the great number of stops which are made by the trains.

The Beaver Falls Car Works, in Beaver Falls, Pa., are doing some repair work but have at present no new work on hand.

The Philadelphia & Reading shops in Reading, Pa., recently completed a gondola car 50 ft. long. It is intended specially for carrying bridge iron.

It was stated last week, on the authority of a Detroit dispatch, that the Peninsular Car Works were about to shut down for 30 and probably 60 days. We are now informed that the dispatch was not correct. The Peninsular Car Works are running full 10 hours a day on new freight cars, and have work enough on hand to keep the shops employed for 40 days to come.

### Bridge Notes.

The Berlin Iron Bridge Co., in East Berlin, Conn., is building a highway bridge of 280 feet span to go to Williamsport, Pa., one of 160 feet span for Camden, Me., one of 150 feet span for Dover, Me., a 140-foot span for Cameron, N. Y., and a number of smaller bridges. The company has recently taken a contract for a new iron drawbridge over the Housatonic River at Bridgeport, Conn., for the New York, New Haven & Hartford road.

The Atlanta Bridge Works of Wilkins, Post & Co., Atlanta, Ga., have recently completed two spans of 130 ft. each in the bridge over the James River in Richmond, Va., for the Richmond & Danville road.

### Iron Notes.

All the rolling mills in Youngstown, O., with the exception of the mill of Brown, Bonnel & Co., are running nearly their full capacity and report a number of orders coming in. Monitor Furnaces at Youngstown, O., is to be sold at sheriff's sale Aug. 9.

The Kaufman Furnaces at Jefferson, Pa., have gone out of blast but expect to resume shortly.

The Colorado Coal & Iron Co. has purchased the machinery of the rolling mill at Ogden, Utah, which has never been operated, and will ship the machinery to Pueblo, Col., to be used in a rolling mill there.

So many sensational rumors have been circulated about the Albany & Rensselaer Iron & Steel Co.'s proposed shutdown that we have taken pains to get exact facts from the company, which are as follows: They expect to close their rail mill about Aug. 1 for an indefinite period. The merchant steel mills will continue running on full time, and the converting works and blooming mill will be run sufficiently to supply the merchant department with steel. The Albany Iron Works department is partially shut down, but will run as orders come in. The rivet and nail factories will continue to run on full time.—*Iron Age*.

The fourteenth annual meeting of the North Chicago Rolling Mill Co. was held at Chicago July 25 inst. The officers of the company reported the works to have produced during the year ending June 30 last, 188,000 tons of pig iron, 171,000 tons of steel rails, 45,000 tons of merchant sizes of iron and steel, and 74,000 kegs of nails. The volume of business showed a gain of 12 per cent. over that of 1883, the gross earnings of the company being \$7,900,000. The directors elected for the ensuing year are Stephen Clement, of Milwaukee, and Nathaniel Thayer, of Boston. Orrin W. Potter was elected President; Nathaniel Thayer, Vice-President; Stephen Clement, Treasurer, Richard P. Hannah, Secretary.

### Manufacturing Notes.

The Concord Machine Works, in Concord, N. H., recently shipped a full line of machinery to equip a car factory in Australia, including a large number of wood-working machines.

The Westinghouse Air Brake Co. recently discharged a number of its employees. The force had been increased largely in anticipation of some heavy orders for freight car brakes which have either been postponed or countermanded, it is said.

The Kelly Lamp Works in Rochester, N. Y., recently shipped a number of locomotive head-lights to the Central Pacific road.

### The Rail Market.

**Steel Rails.**—The market is quiet, with a good many small orders reported. Quotations are nominally \$29@30 per ton at mill, but sales are reported at \$28, and it is even said that that low price has been shaded on one or two orders.

**Rail Fastenings.**—Nominal quotations are unchanged, but the market is weak and orders not plenty, and the actual prices at which sales have been made are not easily found out.

**Old Rails.**—Some large sales of old iron rails are reported at \$18 per ton at tidewater. The market is firmer and holders are asking \$18.50@19 per ton for tees.

### The Cleveland Electrical Railroad.

The obstacles in the way of the perfect working of the electric motor cars on Cleveland's street railway on the first day of the experiment were speedily overcome. On Aug. 1 the car was again set at work and it made regular trips all day, loaded down with passengers. At the eastern terminus of the Garden street extension, passengers were ushered aboard the electric car. Many supposed it to be an ordinary street car, and while they were waiting for the horses to be attached, the engineer pushed the lever, and the coach went off, making the speed of an ordinary street car with ease. No load was too heavy for it. The East Cleveland

road will at once extend the electric line out to the eastern terminus of the Garden street extension, and then begin the extension of the line down town.

### The New Haven Draw-bridge Signals.

A dispatch from New Haven, Conn., Aug. 2, says: "Vice-President Reed, of the New York, New Haven & Hartford road, said that he considered the accident at the Cos Cob drawbridge on Thursday evening, by which an accommodation train from New York was thrown from the rail without damage to property or passengers, satisfactory proof of the thorough practical efficiency of the automatic signal apparatus attached to the bridge, with the design of making it an absolute impossibility for trains to plunge into the opening. The draw had been opened to let a vessel through, and was not back in place again when the train came along. A signal, 2,100 ft. from the bridge and operated before the draw can be moved from its place, was set to indicate that the draw was open. This should have been a warning to the engineer to stop the train, but he carelessly neglected to observe the signal and ran on. Nine hundred feet nearer the bridge is another signal, which, like the other, was turned to give plain warning to the train to come to a stop. The nearer signal, which the engineer also disregarded, does something more, however, than to give a warning, although the warning would be sufficient to prevent an accident in case the engineer heeded it. The opening of the draw not only throws the signal out, but opens a switch, so that in case the engine is not stopped in time it runs upon a side track having a bed of sand at the end. This is what occurred on Thursday evening. Had the draw been closed, both signals would have been set in a position indicating that it was safe to run upon the bridge. There were 400 people on the train. Engineer Minty has been discharged. The automatic apparatus will be applied to the five drawbridges between New Haven and New York and will save 20 minutes of time, as it is not necessary under the law to stop the train at bridges where it is used."

The signals referred to were made and put up by the signal department of the Pennsylvania Steel Co. The apparatus is the invention of Mr. A. G. Cummings, of Harrisburg, Pa., and was made under his supervision.

### Electric Head-Light.

The Chicago, Milwaukee & St. Paul Railway is experimenting with "Woolley's" patent electric head-light. The engine and dynamo are placed on the running board on left-hand side of the locomotive, opposite air brake pump, which is located on the right-hand side. They (engine and dynamo) occupy a space 34 in. in length by 10 in. in width. The dynamo is 18 in. square by 10 in. high. The armature is made up of disks, and is 13 in. long by 6 in. in diameter. The power is furnished by a small rotary engine, built by the Noteman Engine Co., of Toledo, O., which runs at 600 revolutions per minute. The engine is connected to the shaft of the armature direct, the governor being on the opposite end of the shaft. There are no belts or gears of any kind. The dynamo is closed so that it cannot be injured by the weather, etc. The lamp used is a focusing arc lamp, with an ordinary locomotive reflector. The lamp is made so that it can be regulated from the cab of the locomotive. The light is a good one; it is claimed it will penetrate so far into darkness that, should the track be obstructed from any cause, a locomotive, with a light on it, running at the rate of 50 miles per hour, an obstacle can be discovered sufficiently ahead that the locomotive can be stopped in time to avert a disaster. The machines are built by the Woolley Electric Locomotive Head-Light Co. of Indianapolis, Ind. The lamp is of 2,000 candle power. It has an attachment to counteract any quick movement, so that any sudden jar of the locomotive does not affect the light.—*American Machinist*.

### The March of Improvement.

Even the humble centre punch now has its allotted place in trade catalogues. The centre punch of modern times has its body beautifully knurled, and is provided with a lovely ogee head; quite æsthetic in its line.—*Mechanical Engineer*.

### Tire or Tyre.

It is said that the spelling "tyre," which is common in England, comes from the fact that iron bands were first used on wheels in the city of Tyre, in Syria. Nevertheless, the word is spelled "tire" in both Webster's and Worcester's dictionaries. Most American manufacturers of steel tires adhere to the American authorities in spelling, although the Chicago Tyre & Spring Works and the Nashua Iron & Steel Co. make their "tyres" with a "y."

### Paper Head-Linings.

The Michigan Central road has used paper head-linings in its passenger cars for a considerable time, and some account of the way these linings are put on may be of interest.

Trunk-board is used for the lining, and is painted on both sides and on the edges. This is found to be necessary in order to completely protect the board. Formerly it was used in large pieces, but for various reasons the width is now cut down to about 12 in. in the clear. This makes the individual pieces pretty small. Large sheets have been tried, but when they are used the surface is liable to become somewhat irregular, the board not being strong enough to hold its shape in larger pieces. A thin ceiling of ½ in. matched stuff is put into the car roof, and is the same as was formerly used in putting in canvas linings. The lining board is run through the timbers' rolls and bent to the exact curve wanted for the roof. It is hardly worth while to put up the board without a lining under it, although it has been done, and large pieces have been used without support and found to stand fairly well; yet there is a sufficient twisting from the weight of the board to make the job seem unsatisfactory to those who use wooden linings and are accustomed to perfectly flat surfaces.

One great advantage of these linings is their cheapness, and another is that a complete set for a car may be prepared before the car comes into the shop, and be ready to go in as soon as the car is ready to receive them. Some of the latest designs in this kind of decoration to be seen at the Detroit shops of the road are representations of autumn leaves on a ground grain-d to imitate oak, the effect of the graining being in such case quite as good as that of the natural wood, with the additional advantage that the tendency of dust and dirt to adhere to the grained surface is very much less than it is to the unpainted wood.—*National Car-Builders*.

### Safety of Passengers.

The General Manager of the Trans-Ohio divisions of the Baltimore & Ohio has issued the following order: "All passenger train cars that are in use on the Trans-Ohio divisions are being fitted with axes, hand-saws, mauls and fire buckets. It will be the duty of each train crew, when a car comes into their possession, to examine and see that it contains one fire bucket, one pole ax, one maul and one hand-saw. It will also be their duty to know that these tools are in the cars when they are delivered to their connections. It is made the duty of the machinery department, at each station on the divisions, to have these cars examined and reports made to the Master Mechanic at each station, of exact tools in car, which report will be sent by the Master



Mechanic to the Assistant Master of Machinery at Newark, O., and should any tools be missing from the cars, the crew which handled that car between the place where the tools were last reported by the machinery department and the point at which they were found missing will be charged with the value of the tools lost and amount deducted from their wages on the next pay-roll."

#### A Lifting Drawbridge.

There is a drawbridge on the High Bridge Branch of the Central Railroad, of New Jersey, at Dover, N. J., which is unique in its character. The railroad crosses the Morris Canal over one of its locks at grade, and the side walls of the locks are used as abutments for the bridge. The draw is of iron, and is about 25 ft. in length. When opened it is literally raised, one end being hinged and the other lifted by chains swung from a derrick and readily operated by a single bridge tender. For an engine driver to run into an open draw of this character, with a perpendicular section of the track staring him in the face, would certainly be inexcusable. We know of no other instance where a railroad track crosses a canal lock at grade, nor of any other railroad drawbridge of the character mentioned.—*Official Guide.*

#### New Order Signals.

Master Carpenter Potter, of the Western Division of the Central-Hudson Railroad, has commenced the erection at all the stations on the line of the Falls road, his patent order signals, noticed briefly some two weeks since in the *Post-Express*. It may be stated that these signals will prove themselves indispensable as soon as their working is established. They will be a great preventative of accidents, inasmuch as they are to be operated simultaneously with the receipt of a train order, and nothing will be left to the memory of the operator, as has been the case heretofore. The moment he receives an order to hold a train he places the signal in position—a red wooden disk by day and the usual light by night. The signals are easily operated, a slight pull on a rope or chain being all that is required to place them in the position desired. Engineers who disregard the order will do so at their peril and operators and agents will not have the excuse many of them have had, that they forgot to deliver the order. These signals were intended to be applied only to trains for which orders are received, but some of the engineers of freight trains have been in the habit of running by stations at which they should have stopped although no special telegraph orders had been received for them to do so. Superintendent Toucey says that the new signals will be placed against freight trains and he does not believe that any engineer will disregard them. The signals reflect great credit on the ingenuity and inventive skill of Mr. Potter.—*Rochester (N. Y.) Post-Express.*

#### Railroad Sanitation and Cholera.

Mr. W. J. Spicer, General Manager of the Chicago & Grand Trunk road, has issued the following important special circular concerning sanitary inspection:

"The Secretary of the Illinois State Board of Health, in calling my attention to his recent circular addressed to the local health officers and municipal authorities regarding the importance of making thorough preparation for the possible advent of cholera, writes me as follows:

"It is desired, as one important step in the general sanitary movement already inaugurated, that all railway stations, depots and the grounds surrounding the same be put in the best obtainable sanitary condition, with special reference to water-closets and privies; and to the character of the water supply for the use of employes and passengers. The same supervision should also be extended to passenger cars, in the points specified. Accumulations of stagnant water, or the flow and seepage of foul drainage in the vicinity of human habitations are always injurious to health; but during a cholera epidemic they are especially dangerous. So far as such conditions obtain, as the results of embankments or road-beds, they should be remedied as speedily as possible.

"The preservation of public health, whereby, among other things, interruption of travel and traffic may be prevented, is a matter in which common carriers and the general public have a community of both interests and duties."

"I trust that every one will realize the importance of doing everything possible for the preservation of health. No excuse will be accepted for any want of cleanliness about station premises, yards, platforms, closets, etc. All employes having the care and supervision of property will, upon the receipt of this circular, make a thorough inspection of all buildings, outhouses, yards, grounds, etc., of this company, in respect to: 1. The condition of the water supply. 2. The disposition made of night soil, garbage and sewerage. 3. The cleansing of yards, tracks, grounds, etc. Water is one of the commonest mediums through which cholera spreads. Hence the necessity of protecting the supply from contamination by surface drainage of filthy premises or seepage through the ground from privy vaults and cess-pools. Night soil, garbage, sewage and all forms of decomposing vegetable matter are highly prejudicial to health, and should be destroyed by disinfection. A frequent sprinkling of dry earth down the vaults of closets will have a good effect. Closets and urinals in passenger cars must be kept quite clean at all times. Special attention should be given to cleaning car floors and the thorough airing of cars at the end of each trip and before further use. You will call the attention of the public authorities to all filth and unhealthful condition of property adjoining that of this company, and so situated as to affect the healthfulness of this company's premises. I am sure that all agents and all employes generally will cheerfully and vigorously co-operate in efficiently carrying out these directions."

#### Railroads in Nicaragua.

The future railroad system of Nicaragua, to be called the National Railroad, will extend from Corinto Harbor to Pueblo Nuevo (La Paz), thence a branch line to Momotombo, to Managua, the capital, and Granada, making a total distance of 125 miles, and forming a complete right angle through the most fertile part of the country. That section is finished which connects Corinto, on the Pacific, with Momotombo on Lake Managua, which latter is a beautiful sheet of water, about 500 square miles in size, runs through the garden spot of Nicaragua, over the magnificent plain of Leon, passing through Amayut—railroad repair shop—Chinandega, with 15,000 inhabitants, Chichigalpa, Posotiga, Cuesalguape, Leon (42,000 inhabitants), and La Paz. On reaching Momotombo passengers and goods are forwarded to Managua by steamers, which make connections every day both ways. The railroad line is 58 miles long, and was completed Jan. 1, 1884. The first section of it, however, to Leon has been in operation for two years. The road is an average good one; well equipped and well maintained; best Bessemer steel, 40 pounds per yard weight, laid to 3 ft. 6 in. gauge; on mahogany, ligum vite, coajoche, guachipilin, laure-negro, robe, cortex-negro sleepers (cross-ties). Sand ballast has been used throughout.

The traffic consists of freight mostly, which is dyewood, coffee, rubber and hides. As much as 400 tons of dyewood per day are alone transported to Corinto for shipment to foreign ports. The contract to build the road was let to H. B. D. Norris, a Virginia gentleman, for \$15,000 per mile, without equipment. The first four miles from Corinto were built by the government, and cost \$25,000 per mile. The

original location was determined by Charles Randolph. Addison Marbury was Engineer for the contractor, and Don Max Sonnenstein, Inspector of public works on the part of the Government. The net proceeds of 1883 were 4½ per cent. of the invested capital. Cost of building and equipment, operating and maintaining expenses, 56 per cent. of gross earnings. Net earnings in May, \$8,600. The line that will connect Managua with Granada is under construction. The grading is completed. Its length is 32 miles, 10 miles of which are already laid. It is expected to complete 20 miles of this line in five months, and when so completed to open it to the public immediately.

The railroad, which is to connect both the above named lines, between Managua and La Paz, has been partly located by T. E. Hocke, Chief of Location, with the assistance of J. W. W., Assistant Government Engineer. The location is to be continued next month, and is to be complete and ready for bidders probably by December.

The Nicaraguan government also intends to re-establish the splendid transit route of 1858, which is so vastly favored by many natural coincidences. The route will pass from San Juan del Sur, on the Pacific, by rail for 18 miles to San Jorge Bay, in Lake Nicaragua; thence navigable for vessels of 8 ft. draught over the lake to the mouth of the San Juan River, San Carlos Castillo; down Rio San Juan, over Mico, Balas and Castillo Rapids, which will be corrected by constructing dams at each, and side channels with locks around them.

San Carlos River brings in a tremendous quantity of silt, which has almost entirely filled up the old bed of the Rio San Juan, to Greytown (San Juan del Norte), and with the great damage done to the port by shifting bars, it has made navigation almost an impossibility, as the vast mass of the San Juan River water is directed into the channel of the Rio Colorado and lost to Nicaragua. This will be remedied by cutting a canal from the head of San Carlos River entrance, along the Rio San Juanillo, to Greytown, and by there building a breakwater. With some dredging it is expected to be again able to form a harbor of sufficient depth to receive the Royal Mail steamships of 26 ft. draught.

The surveys for this work are under way and will be completed June 15, whereupon the Government will advertise for bids.—*New Orleans Times-Democrat.*

#### THE SCRAP HEAP.

##### Ten Years for Refreshments.

The unintelligibility of a brakeman's call when announcing a station is proverbial. The other day, however, one called this station plain enough. There was a sheriff on the train with some prisoners for the penitentiary, and upon announcing the arrival here the brakeman said: "Yuma! Change clothes; ten years for refreshments!"—*Yuma Sentinel.*

"Why is a woman always too late for the train?" asks an exchange. Because she isn't. Pretty often she is nearly an hour too early for the train, and runs several blocks for fear she will miss it.—*Norristown Herald.*

When a Mexican feels aggrieved because a railroad company has not sent him a pass, he just goes out and pulls up a few rails. This is a great deal more sensible than moping around and grumbling for six or seven days.—*Burlington Free Press.*

A Bridgeport dispatch describes an invention which is said to have been made by a man in that place, whose name is said to be Rosenfelt. According to the statement it is a pilot for locomotive engines, which, instead of killing people it meets on the track, lifts them gently off. It is described as fitted with spring cushions and as having been tested first on chickens and dogs, and then on human beings.—*Hartford Courant.*

##### Her First Trip.

"I'm mighty skeered this thing'll run away an' be the cause o' our death," agitatedly spoke the nervous old woman, as she tremblingly took her seat in the car and listened in a terrified manner to the hiss and hiss of the air-brakes.

After a few miles travel, however, she became a little more quiet, and would probably have enjoyed herself immensely if the train had not stopped at a water-tank very suddenly.

"Oh, Lordy!" she screamed—"what's the matter, mister?"

"Nothing," answered the conductor; "they have just stopped to get on water."

"Get on water!" she shrieked; "land sakes, man, you don't mean to say they are gwine ter put this big hulking thing on water? Oh, the lyin' rascals! They told me afore we lef' that thar was nothin' but rails ter run on, an' now in less'n five miles ye've stopped to get on water. Let me outen here; I'm gwine ter walk."—*Atlanta (Ga.) Constitution.*

##### Receivers.

Little Jack—"Pa, why is a receiver so called?"

Pa—"What kind of a receiver do you mean?"

Little Jack—"Why, I mean the kind that is appointed when a company gets in a tight place. What does a receiver receive?"

Pa—"Pretty much all there is, my son."—*Philadelphia Call.*

##### A Runaway Locomotive.

A dispatch from Macon, Ga., July 28, says: "This morning about 7 o'clock, when the hostler, Mr. Sheridan, of engine No. 27, East Tennessee, Virginia & Georgia Railroad, had brought it out to pull out with the north bound 7 o'clock train for Atlanta, he closed the throttle and left it standing below the depot. The steam gradually worked itself out, and the throttle being on down motion, it started backward of its own volition. When the tender reached the switch about 50 ft. back, it was heavily loaded with coal and jumped the track, running about 50 ft., tearing and breaking it up badly. It finally stopped and the engine lay still panting, an engineer rushed to it and closed the throttle. A force of hands were sent for by Mr. Mitchell, Master of Train Service, and it was placed in position. The north bound train was delayed a while on account of it."

##### Every Little Helps.

A writer in the *Fireman's Magazine* says that since the Philadelphia & Reading Railroad got control of the New Jersey Central the pay car has been chronically behind time, and the boys are having trouble to make both ends meet. On account of this they are scouring the streams after piscatorial prey, and the catches help to prevent the larder from getting busted.

##### The Trials of Brakemen.

The railroads have one rule which is severe on the brakemen. Its effects are illustrated by an incident that occurred a few days ago on the Bee line, near Berea. A freight train broke in two, and it was necessary to send a brakeman back to flag an approaching train and save a rear collision. When the broken train had been mended the conductor gave the signal and went off, leaving the brakeman to walk to Berea and find his way into Cleveland as best he could. It is said that the brakeman's profanity made a sulphurous haze hover over Berea. The brakeman was grieved and astonished when told by his Superintendent: "The conductor did just

what he should have done. The most dangerous time and that which leads to most collisions is when a brakeman, having been sent out to protect the rear of his train and recalled, is coming in. During the time that he is walking the half mile or more to his train it is entirely unprotected, and hence conductors are not expected to wait for brakemen. It is a hard rule, but until some new method of flagging is devised it will have to be followed."—*Cleveland Herald.*

##### Redemption Bureau of the Pennsylvania Railroad.

The sums of money paid out annually amount to a small fortune. From the transactions in this department, when based upon pro rata and full rates, a slight actual gain accrues to the road, and even where there is an actual expenditure it has been found that there is a gain in another way through the public influence upon the public mind, and the convictions thus inspired as to the honesty and purpose of fair dealing of the corporation. In many cases serious inconvenience is saved to passengers through the operation of this system and in some positive trouble is averted, for not seldom the amounts restored are of considerable importance to the recipient.

To illustrate this simply at the outset, almost every one who travels by rail has now and again had occasion to pay his fare on the cars. Either he has neglected to get a ticket, or has just escaped missing the train and had no time to stop at the station agent's window, or, being on the train, he has changed his mind and alighted short of his destination.

Such cases are provided for and remedied under the operation of a regular system, the unused coupons being redeemed at a slight advance for local fares over through rates. Tickets twice paid for are also redeemed, and in short, any pecuniary hardship experienced by a passenger is, after due examination, carefully righted, and very little time elapses between the reception of the complaint and the return of the money. Thus, in a case in which a passenger had mislaid his ticket while on the train and not being able to find it in time to hand it to the conductor on his round, had quietly paid his fare a second time, the redemption bureau, on being informed of the facts, at once responded as follows:

"Mr. —, Sir—Herewith I hand you order No. 25, 138 on the treasury of this company, in favor of yourself for 38 cents, covering the value of unused return coupons of daily excursion tickets Nos. 866 and 667, between Merchantville and Milson's, and conductors' memos. Nos. 59 and 60, book 1, 841, left at this office this day for redemption."

[Signed]

"Asst. G. P. Agent."

Accompanying this is a check for the money and a blank receipt to be signed by the person to whom it is paid. But not only are errors and overpayments rectified, but the company goes a step further in concession to public convenience in charging, even when a part of the ticket has been ridden out, only for the distance actually traveled. It is needless to say that not every company will do this, and certainly the ticket, when once purchased, might be considered, it might seem without unfairness, as at the purchaser's risk. But on the Pennsylvania road, if a passenger buys a ticket for Pittsburg and travels only as far as Bryn Mawr, and is there detained or stopped altogether by any cause, the company refunds to such passenger the nine dollars odd of the difference between the prices for the distance he rode and the distance he paid for.

That this system is fully appreciated by the public is shown by a mass of correspondence, the receipts being accompanied very often by acknowledgments or expressions of cordial approval.—*Philadelphia Inquirer.*

##### The Travelling Hog.

"Is this seat unoccupied?" a lady timidly inquired.

Her voice was not very loud. It did not recall the fat man from his reverie nor his gaze from something interesting in the brick wall of the depot. The lady passed on as though embarrassed at the sound of her request.

"Is one of these seats disengaged?"

The question was asked in a firm, clear voice by a young woman, who looked steadily into the monopolist's eyes as though she understood him. His head turned slowly, and he coldly replied, "all engaged."

Then he resumed his study of the wall, and the train moved slowly out of the depot.

"Oof!"

The exclamation resembled exactly the grunt of a pig. It was made by a young man with a dimple in his cheek and a twinkle in his eye, on a seat diagonally across the aisle and behind the baldheaded man. He was absorbed in an interesting article in a newspaper. The exclamation was not noticed.

"Oof! Oof! Oof!"

A young lady in the seat behind this person intended to be described by the young man with a dimple, tittered aloud. The fat man with four sittings stole a wicked glance at the young man with the newspaper, and then settled back with a determined gesture of his head and neck as if he wasn't going to mind it.

"Oo-oo-oo! kweek! kwee-ek! kwee-ek! oof, oof, oof, oof!"

The passengers turned their attention to the passenger with the four seats. The bald spot on his head began to get red.

"Kwee-ek! kwee-ek! kwee-ek! kwee-ek! oof, oof, oof, oof!"

A tittering and giggling broke out spontaneously up and down the car. The bald spot on the fat man's head blazed. Then one foot was dragged slowly off from the front seat, then the other. A hand reached out carefully and set one valise on the floor. Then the other valise followed.

"Seats here, I guess, ladies," he growled.

Three women threw grateful glances at the grunter and took their seats. The grunter, who had not lifted his eyes from his newspaper, turned it over to continue reading, but just at that instant the train glided into the tunnel.—*New York Sun.*

##### Trial on a Train.

The Pittsburgh Dispatch has the following: "One of the most novel trials on record took place on a passenger train of the Memphis & Little Rock Railroad, between Lonoke and Little Rock. Judge F. T. Vaughan of the Circuit Court was on the train. After it left Lonoke County a man named G. B. Farmer, of that county, was arrested by a deputy sheriff. The charge against the prisoner was for carrying a slungshot. The law in Arkansas against carrying deadly weapons is rigidly enforced. When the prisoner learned that Judge Vaughan was on the train he went to him and begged for an immediate trial. He said that his wife was sick, and he did not want to be taken away from her. The learned judge is a character in his way, and said he would try him at once. He declared the court open for business, and called Farmer to the witness box—that is, to a seat in the car—and asked him whether he desired to plead guilty or not. The passengers crowded around this novel court and watched the proceedings from various perches on seat-rails and from the aisles. Farmer replied: 'Your honor, I desire to plead guilty.' 'All right,' continued the judge, 'the prisoner pleads guilty. I assess his fine at \$40. Mr. Sheriff, take your prisoner.' This ended the brief trial, and the prisoner paid his \$40 to the sheriff. At the next station he got off the train to make his way as quickly as possible to his sick wife. This is the only case of justice on the wing of which there is any record."



**A Street Crossing Accident.**

In Boston on the evening of July 30, a freight train on the Dock Branch of the Fitchburg road struck a horse-car at the Warren bridge crossing. The car was dragged some 50 ft. and one passenger was very badly injured and several others slightly hurt. The accident seems to have resulted from the carelessness of the gate tender at the crossing, who allowed it to pass upon the track and then shut the gates, hemming the car in so that it was impossible to escape from the approaching train. A considerable loss of life was narrowly avoided, adding another to the many instances of the danger of grade crossings.

**Not Beaten so Easily.**

"Suppose," said an examiner to a student in engineering, "you had built an engine yourself, performed every part of the work without assistance, and knew that it was in complete order, but when put on the road the pump would not draw water, what would you do?" "I should look into the tank and ascertain if there was any water to draw," replied the student.

**General Railroad News.****MEETINGS AND ANNOUNCEMENTS.****Meetings.**

Meetings will be held as follows:

*Boston, Hoosac Tunnel & Western*, annual meeting, at the office in New York, Aug. 20.  
*Norfolk Southern*, annual meeting, at the office in Elizabeth City, N. C., Aug. 15, at noon.  
*Poughkeepsie & Southwestern*, annual meeting, at No. 97 Nassau street, New York, Aug. 20, at noon.  
*St. Paul, Minneapolis & Manitoba*, annual meeting, in St. Paul, Minn., Aug. 20.

**Dividends.**

Dividends have been declared as follows:

*Chicago & West Michigan*, 2 per cent., semi-annual, payable Aug. 15, to stockholders of record on Aug. 4.  
*Cleveland & Pittsburgh* (leased to Pennsylvania Co.), 1½ per cent., quarterly, payable Sept. 1.  
*Detroit, Lansing & Northern*, 3½ per cent., semi-annual, on the preferred stock, and 3 per cent., semi-annual, on the common stock, both payable Aug. 15, to stockholders of record on Aug. 4.  
*Nesquehoning Valley*, 3½ per cent., semi-annual, payable Sept. 1.  
*Kansas City, Fort Scott & Gulf*, 4 per cent., semi-annual, on the preferred stock, 2½ per cent. on the common stock, both payable Aug. 15, to stockholders of record Aug. 8. This makes 8 per cent. on preferred and 5½ per cent. on common this year; last year the dividends were 8 per cent. on preferred and 3 on common stock.  
*Marquette, Houghton & Ontonagon*, 2½ per cent., semi-annual, on the preferred stock, payable Aug. 15, to stockholders of record on Aug. 7. The last dividend was 4 per cent.

*New York, Providence & Boston*, 2 per cent., quarterly, payable Aug. 11. Transfer books close Aug. 4.  
*Terre Haute & Indianapolis*, 4 per cent., semi-annual, payable, Aug. 15, at the Treasurer's office in Terre Haute, Ind., or at the office of the Farmers' Loan & Trust Co. in New York.

**Railroad and Technical Conventions.**

Meetings and conventions of railroad associations and technical societies will be held as follows:

*Traveling Passenger Agents' Association*, annual meeting, in Denver, Col., on Tuesday, Aug. 12.  
*Western Association of General Passenger & Ticket Agents*, adjourned meeting, in Minneapolis, Minn., on Wednesday, Aug. 13.  
*Train Dispatchers' Association*, preliminary meeting, to form an association, in Louisville, Ky., on Wednesday, Aug. 20.  
*Master Car-Painters' Association*, annual convention, in Boston, on Wednesday, Sept. 3. A full programme was given last week.  
*Road-Masters' Association of America*, annual convention, in Indianapolis, Ind., on Wednesday, Sept. 10.  
*Association of American Railroad Superintendents*, semi-annual meeting, in Boston, on Tuesday, Sept. 16.  
*National Association of General Passenger & Ticket Agents*, semi-annual convention, in Boston, on Tuesday, Sept. 16.  
*New England Railroad Club*, first monthly meeting for the season, at the rooms in the Boston & Albany station in Boston, on Wednesday, Sept. 24.  
*New England Road-Masters' Association*, annual convention, at White River Junction, Vt., on Wednesday, Oct. 8.  
*General Time Convention*, fall meeting, at the Continental Hotel, Philadelphia, on Thursday, Oct. 9.  
*Southern Time Convention*, fall meeting, at No. 46 Bond street, New York, on Wednesday, Oct. 15.  
*American Street Railway Association*, annual convention, in New York, on Wednesday, Oct. 15.

**Foreclosure Sales.**

The *Memphis, Selma & Brunswick* road is to be sold at public sale in Holly Springs, Miss., Aug. 11. The road was intended to run from Memphis, Tenn., through Mississippi to the Alabama line, about 200 miles. Track is laid on the road from Holly Springs to Byhalla, 16 miles, and also on 2½ miles in Memphis. An issue of \$4,000,000 bonds was authorized, but none have been sold, although some were pledged as security for loans.

**New England Railway Club.**

Mr. J. M. Ford, Secretary, gives notice that the New England Railway Club will hold its annual excursion and dinner on Boston Harbor on Wednesday, Aug. 20 next. Persons desiring to participate in the excursion can do so by communicating with the Secretary at Allston, Mass. Tickets for the excursion, including the dinner, will cost \$2 each, and notice must be sent to the Secretary by Aug. 16.

**Train Dispatchers' Association.**

A meeting of the train dispatchers of railroads centering in St. Louis was held in that city July 28, a considerable number being present, and a still larger number represented by delegates. Mr. J. W. Ravelin was chosen Chairman and J. D. Henry, Secretary. Delegates were chosen to the meeting to be held in Louisville to form a national association and the constitution and by-laws of the local association were considered. A provisional constitution was adopted calling for periodical meetings, for the reading of papers and discussion of subjects relating to train dispatching and generally for the professional improvement of the members. This constitution may be modified after the meeting of the National Association to agree with the rules then adopted.

**ELECTIONS AND APPOINTMENTS.**

*Annisston & Atlantic*.—Mr. J. T. McDevitt has been appointed Auditor, with office at Anniston, Ala. Mr. Thomas K. Scott succeeds Mr. McDevitt as General Freight and Passenger Agent.

*Chicago & Northwestern*.—Mr. C. A. Lehman has been appointed Road-master of the Galena Division. He was recently Supervisor on the Delaware Division of the Erie.

*Chicago, St. Paul, Minneapolis & Omaha*.—Mr. W. B. Wheeler, Traveling Passenger Agent of this company for the past ten years, has been appointed City Ticket Agent at Minneapolis (office No. 13 Nicollet House block). Mr. M. M. Wheeler will succeed Mr. W. B. Wheeler as Traveling Passenger Agent, and his territory will cover the St. Paul & Duluth Railroad, the St. Paul, Minneapolis & Manitoba Railway, and the Northern Pacific Railroad, east of and including Butte and Garrison. Mr. W. H. Mead, with office at No. 4 Washington street, Portland, Oregon, has charge of the territory west of Garrison, Montana, including British Columbia. Mr. S. G. Strickland, with office at No. 10 William street, Winnipeg, Manitoba, has charge of the territory in Manitoba and west to British Columbia.

*Chicago & West Michigan*.—Mr. Allan Bourne has been appointed General Purchasing Agent of this road, vice E. A. Hill, with office at Detroit.

*Cincinnati, Hamilton & Dayton*.—Mr. W. H. Stark is appointed Assistant General Superintendent. He was recently Superintendent of the Dayton & Michigan Division.

*Delaware & Hudson Canal*.—Mr. C. H. Ewings has been appointed Car Accountant of this company, with headquarters at Albany, N. Y., to take effect Aug. 1. Car and mileage reports should after that date be addressed to him.

*Detroit, Grand Haven & Milwaukee*.—Mr. W. J. Spicer, General Manager of the road, has issued the following general order:

"Mr. George B. Reeve has been appointed Traffic Manager of this company, and will assume the duties on and after Aug. 1. Mr. Thomas Tandy, who has hitherto acted as General Freight Agent of this company, being fully occupied with similar duties on the Great Western Division of the Grand Trunk Railway." Mr. Wm. J. Spicer is now General Manager of this road, as well as of the Chicago & Grand Trunk. Mr. George R. Nash having been transferred to other duties on the Grand Trunk road.

*Grand Trunk*.—The General Manager has recently issued the following circular:

"On an after Aug. 1, Mr. W. J. Spicer will be changed with the general supervision of the Chicago, Detroit & Canada Grand Trunk Junction and Michigan Air Lines.

"Mr. George B. Reeve will take charge of the traffic arrangement of these companies, and

"Mr. A. B. Atwater will undertake the duties of Assistant Engineer, having charge of the permanent ways, works and buildings.

"Mr. H. Roberts will continue to act as Assistant Locomotive Superintendent of the districts as heretofore.

"Mr. W. J. Morgan will undertake the duties of District Superintendent."

*Kansas City & Independence*.—The directors of this new company are: Robert Gillham, William M. Hall, William H. Lucas, George Sheidley, Wm. J. Smith. Office in Kansas City.

*Louisville, New Albany & Chicago*.—The office of Traffic Manager of this road has been abolished, and Mr. W. H. McDoel has been appointed General Freight Agent. Mr. Murray Keller will be reappointed General Passenger Agent.

*Missouri Pacific*.—Mr. C. B. Dodge has been appointed Contracting Agent of this company with headquarters at Chicago. He was previously connected with the Atchison, Topeka & Santa Fe road.

*New York Elevated*.—The following have been chosen directors of this road to fill vacancies occasioned by resignations: F. F. Thompson, T. W. Pearsall, James A. Cowing, Simon Wormser, Alfred C. Barnes, J. J. Slocum, C. W. Chapin, Jr., J. K. Lane, Cyrus W. Field, Jr., John V. Cockcroft, F. K. Day, R. W. Leonard, Mark Hopkins, Jr.

*New York, Philadelphia & Norfolk*.—Mr. R. B. Cooke has been appointed General Passenger and Freight Agent of this company, with office at Norfolk, Virginia.

*Ogdensburg & Lake Champlain*.—Mr. Frank Owen has been appointed General Freight and Passenger Agent, vice F. L. Pomeroy, resigned.

*Ohio Southern*.—Mr. D. H. Roche has been appointed General Freight Agent of this company, with office at Springfield, Ohio.

*Pacific Coast*.—Mr. George F. Gamble has been appointed Accountant of this road and will have charge of the accounts of the operative department.

*Rutland*.—At the annual meeting in Rutland, Vt., July 30, the following directors were chosen: Charles Clement, John W. Stewart, George M. Barnard, James O. Sargent, Bradley B. Smalley, William Wells, John T. Coolidge, George H. Ball, Percival W. Clement. The board organized by the choice of Charles Clement as President.

*Texas & St. Louis*.—Mr. J. J. Freer has resigned his position as Division Superintendent of the Iron Mountain road to accept a position as General Superintendent of this road.

*Wabash, St. Louis & Pacific*.—Mr. James F. Joy has been chosen President of this company in place of Jay Gould, resigned.

*Wilmington & Northern*.—Mr. F. L. Hills is appointed Chief Engineer, to take effect Aug. 1, vice Mr. J. H. Thompson, resigned.

**PERSONAL.**

—Mr. E. A. Hill has resigned his position as Purchasing Agent of the Chicago & West Michigan road.

—Mr. W. R. Price has resigned his position as General Freight and Ticket Agent of the Pacific Coast road.

—Mr. A. E. Buchanan retires from his position as Division Superintendent of the Texas & St. Louis Railroad on Aug. 1. His address will be at Little Rock, Ark., for the present.

—Mr. A. B. Southard retired on Aug. 1 from the position of General Traffic Manager of the Louisville, New Albany & Chicago road, his resignation having been accepted by the board.

—Mr. Nicholas Greener, at one time Master Mechanic of the Mississippi Central road, died recently in Galveston, Tex. At the time of his death he was running as a locomotive engineer on the Galveston, Houston & Henderson road.

—Mr. G. A. Coolidge, who recently resigned the position of Superintendent of Motive Power of the Fitchburg Railroad, was last week presented with an elegant silver service and a gold-headed cane by the employees of his late department. The presentation was made by the Chief Clerk on behalf of the employees.

—At a recent meeting of the Georgia Railroad Commission the Board passed resolutions very complimentary to Mr. Briscoe, the Secretary, and at the same time voted to

increase his salary to the extent of \$300 a year. Mr. Briscoe has served as Secretary for some time, and was previously on the Western & Atlantic road.

—Col. Charles P. Ball, one of the Railroad Commissioners of Alabama, and formerly General Manager of the Alabama Great Southern road, was seriously injured recently by the ditching of a special passenger train on the Memphis & Charleston road. Colonel Ball's injuries are painful, but not dangerous, and there is no doubt that he will recover.

—Mr. George Nichols died July 26 while on a visit to some friends at Black Rock, Conn. Mr. Nichols was born in Fairfield, Conn., in 1829, but has for a number of years resided in Texas. He was for a long time Superintendent of the Galveston, Houston & Henderson road and for some time was also President of the company. He was also for a time Superintendent of the Galveston, Harrisburg & San Antonio. He was interested in the Gulf, Colorado & Santa Fe road from its first commencement and was for several years Superintendent of the road and afterwards Master Mechanic. He retired from active work on account of ill health. Mr. Nichols was also employed for a time in the construction of the Panama Railroad.

—At the regular monthly meeting of the directors of the Mexican Central Railroad in Boston, Aug. 4, the following resolutions were unanimously adopted:

"Whereas, Thomas Nickerson, by his courage, foresight and integrity and by the large measure of confidence which the public has accorded him, has served this company from its earliest inception; and

"Whereas, Under his administration the company has constructed and put into operation its main line from the United States to the city of Mexico; and

"Whereas, On June 2 last, on account of his age and condition of health, he resigned the office of president, and the Board has accepted his resignation, to take effect this day; therefore

"Resolved, That the thanks of the company are due, and are respectfully tendered to Thomas Nickerson for his earnest, efficient and loyal services.

"Resolved, That in his voluntary retirement from the active duties of the presidency, he carries with him the sympathy and confidence of his associates and their hearty wishes that he may live many years in health and prosperity and enjoy the final success of the great international enterprise of which he has been the leading spirit and with which his name is inseparably identified."

Mr. Nickerson is now 75 years old. His business career has been a very active one, and he has earned the rewards of a quiet life. He will, however, remain a director of the Mexican Central, and will retain all his large holdings of stock in that company. He will also remain a director of the Atchison, Topeka & Santa Fe and the numerous other corporations in which he is interested.

—Mr. Thomas Dickson, President of the Delaware & Hudson Canal Co., died July 31, at his summer residence in Morristown, N. J., of heart disease, from which he had been a sufferer for a long time. He was a son of James Dickson, a Scotch machinist, who came to this country in 1835, settled in Carbondale, Pa., entered the employ of the Delaware & Hudson Canal Co., and eventually became its Master Mechanic. Thomas Dickson was born in Berwickshire, Scotland, in 1824, and was only 8 years old when his father emigrated to Canada. The elder Dickson remained three years in the Dominion, and then came over to the United States and settled in Pennsylvania. For two years after settling in the Keystone State Thomas went to school, but in 1837, at the age of 13, he abandoned the pursuit of knowledge for that of business. His first situation was with George A. Whiting, who had charge of the horses and mules of the canal company, but in the spring of 1838 he secured a clerkship in the store of Charles T. Pierson, in Carbondale. This store passed successively into the hands of Joseph Benjamin and F. P. and Galusha A. Grow, but young Dickson retained his place under these changes, and, in 1845, was able to start in business for himself and form a partnership with his former employer, Joseph Benjamin. This partnership continued until 1852, when he identified himself with iron manufacture by purchasing an interest in a foundry and machine shop. In 1856 he established at Scranton, Pa., the Dickson Manufacturing Co., for the manufacture of steam engines and mining machinery. This company was very successful, and in the course of 20 years its capital grew from \$20,000 to \$1,350,000, and from steam engines it turned to building first-class locomotives. Mr. Dickson was Manager of this company until 1860, when he retired to enter the service of the Delaware & Hudson Canal Co. as Superintendent of its coal department. In 1864 he became General Superintendent of the company; in 1867 he was elected Vice-President, and in 1869 President. From that time to his death he filled the office continuously, and the business of the company grew to vast proportions under his direction. The mining operations have been extended over an area of about 44 miles, and, step by step, control has been acquired of a very extensive railroad system. In 1873 Mr. Dickson organized a company with \$1,500,000 capital, purchased 23,000 acres of iron land on the shores of Lake Champlain and erected furnaces. Notwithstanding the magnitude of the task of directing the affairs of these various corporations, Mr. Dickson found time to act as director in 20 or 30 gas, iron, banking, insurance, and other companies, many of which were planned and organized by himself. In 1872, with his wife and son, he made a trip around the world. He was a member of the Presbyterian Church, an upright and conscientious man, liberal and kindly in disposition, and was highly esteemed by a wide circle of friends and acquaintances.

**TRAFFIC AND EARNINGS.****Chicago-St. Louis Pool.**

The companies forming the Chicago-St. Louis pool, which expired by limitation July 31, have consented to an extension until Aug. 15, because it was found impossible to complete the necessary arrangements for a new pool. A meeting of the general managers of the different roads is to be held in Chicago, Aug. 7, for that purpose. It is understood that not much change will be made in the agreement, but a new division of the business will be called for. Percentages will probably have to be settled by arbitration.

**Lake Superior Iron Ore.**

Shipments of iron ore from the Lake Superior region from the opening of navigation up to July 30 are reported by the Marquette Mining Journal as follows:

	1884.	1883.	Increase.	P. c.
From L'Anse.....	36,102	29,081	7,021	24.2
From Marquette.....	437,863	269,391	168,472	62.4
From Escanaba.....	845,289	607,328	237,961	26.7
From St. Ignace.....	32,696	8,299	24,397	292.7
Total.....	1,351,950	914,099	437,851	38.8

Of the Marquette shipments, 359,647 tons were brought down by the Marquette, Houghton & Ontonagon, and 78,261 tons by the Marquette & Western road. Of the Escanaba shipments, 303,590 tons were from the Marquette District and 541,709 tons from the Menominee District. In



addition to the Lake shipments, there were 15,108 tons of ore delivered to local furnaces. Shipments of pig-iron were 5,027 tons.

#### Railroad Earnings.

Earnings for various periods are reported as follows:

Seven months ending July 31:	1884.	1883.	Inc. or Dec.	P. c.
Canadian Pacific	\$2,754,712	\$2,465,502	I.	\$289,210 11.7
Central Iowa	783,308	678,796	I.	104,512 14.0
Chi. & Alton	4,586,267	4,537,081	I.	49,186 1.1
Chi. & East Ill.	838,804	908,001	D.	81,197 9.0
Chi. Mil. & St. P.	12,377,000	11,616,221	D.	760,779 6.0
Chi. & Nor. West.	12,633,191	12,049,715	D.	416,524 3.0
Chi. St. P. Min.				
Chi. & O.	3,114,744	2,811,405	I.	303,359 10.8
Cin. Ind. St. L. & Chi.	1,321,975	1,348,254	D.	26,279 1.9
Det. Lan. & No.	770,736	864,750	D.	88,030 10.3
Louis. & Nash.	7,937,966	7,500,158	I.	137,208 1.8
Mil. L. S. & W.	621,004	567,048	I.	53,956 9.4
Northern Pacific	6,894,697	4,381,283	I.	2,483,414 56.5
St. L. & San Fr.	2,486,771	1,976,946	I.	509,825 25.8
Wab. St. L. & P.	8,083,115	8,600,201	I.	82,914 0.9

Six months ending June 30:	1884.	1883.	Inc. or Dec.	P. c.
Atch., T. & S. F.	\$7,646,815	\$7,368,994	I.	\$277,821 3.8
Net earnings	3,535,940	3,728,677	D.	192,737 5.2
N. Y. & N. Eng.	1,591,495	1,665,313	D.	73,818 4.4
Net earnings	294,183	162,317	I.	131,866 81.4

Month of June:	1884.	1883.	Inc. or Dec.	P. c.
Atch., T. & S. F.	\$1,254,029	\$1,261,085	D.	\$7,056 0.6
Net earnings	452,499	710,135	D.	257,636 30.3
N. Y. & N. Eng.	283,531	396,691	D.	113,160 7.5
Net earnings	68,167	63,515	I.	4,652 7.0

Month of July:	1884.	1883.	Inc. or Dec.	P. c.
Canadian Pacific	\$560,000	\$548,000	I.	\$12,000 2.2
Central Iowa	96,322	100,972	D.	4,650 4.6
Chi. & Alton	724,617	731,501	D.	6,884 0.9
Chi. & East Ill.	128,404	120,694	I.	7,710 6.4
Chi. M. & St. P.	1,950,000	1,829,285	I.	120,715 6.6
Chi. & Nor. West.	1,960,300	2,160,600	D.	198,300 9.2
Chi. St. P. M. & O.	461,300	444,700	I.	16,600 3.7
Cin. Ind. St. L. & Chi.	211,822	190,122	I.	21,700 11.4
Det. Lan. & No.	98,047	121,355	D.	23,308 23.3
Louis. & Nash.	1,072,795	1,124,775	D.	51,980 4.6
Mil. L. S. & W.	95,139	91,835	I.	3,304 3.5
Northern Pac.	1,026,449	850,233	I.	176,216 20.7
St. L. & San Fr.	367,800	280,000	I.	87,800 31.3
Wab. St. L. & P.	1,234,258	1,216,811	I.	17,447 1.4

Weekly earnings are usually estimated in part, and are subject to correction by later statements.

#### Grain Movement.

For the week ending July 26, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the eight Atlantic ports have been, in bushels, for the past eight years:

Year.	North-western receipts.	North-western shipments.	Atlantic receipts.
1877.	3,591,829	2,987,721	340,916
1878.	5,352,269	4,327,894	1,333,150
1879.	6,702,732	4,799,103	1,670,595
1880.	9,397,826	6,074,774	1,773,891
1881.	8,722,873	5,093,208	2,121,597
1882.	9,717,729	4,740,417	1,768,028
1883.	4,185,257	2,929,946	1,184,177
1884.	3,853,077	2,937,868	1,510,355

Thus the receipts of the Northwestern markets for the week this year were smaller than in the corresponding week of any preceding year since 1877, and 332,000 bushels (8 per cent.) less than last year, when also they were the smallest since 1877, yet the receipts were 624,000 bushels more than in the previous week of this year, and were the largest for five weeks.

The shipments of these markets were 708,000 bushels (24 per cent.) more than in the corresponding week of last year, but less than in any previous week since 1877. They were 264,000 bushels less than in the previous week of this year, and with one exception were the smallest since March. The rail shipments, however, were much larger than last year and were a large proportion of the whole. The shipments down the Mississippi were but 25,333 bushels.

This was the first week of the 25-cent rail rate, which was likely to check rail shipments; but the report shows the rail shipments to have been the largest since June, though but a trifle larger than the week before. Doubtless a very large part of them were billed the week before at the old rate.

The receipts of the Atlantic ports for the week were a third larger than in the corresponding week of last year and even a trifle larger than in 1882, but much less than in the four years preceding. They were no less than 1,721,000 bushels (61 per cent.) more than in the previous week of this year, and were the largest since the first week of October last year. The increase over the previous week is nearly all in wheat, the receipts of which increased from 1,727,000 to 3,230,000 bushels. The increase was chiefly at Baltimore and Philadelphia, which receive especially from the southern part of the winter wheat country. Baltimore's receipts of grain of all kinds were the largest since August of last year, and Philadelphia's were the largest since August, 1882. This is the first indication of the beginning of a free movement of the new wheat crop.

Exports from Atlantic ports for the week to July 26 for five years have been:

Year.	1880.	1881.	1882.	1883.	1884.
Flour, bbls.	165,219	113,678	96,247	106,518	124,771
Grain, bu.	6,694,132	4,636,681	3,006,951	2,098,795	2,862,307

Total, bu. . . 7,437,587 5,148,233 3,440,062 2,591,626 3,423,776

The exports of the week are the largest of the year, though but little more than the week before; but we see that, though larger than last year and about the same as in 1882, they were a third less than in 1881, and not half as great as in 1880.

Buffalo grain receipts by lake from the opening of navigation to July 31 were as follows, flour in barrels and grain in bushels, flour being reduced to wheat in the totals:

Year.	1884.	1883.	Decrease.	P. c.
Flour	867,590	908,015	40,425	4.4
Grain	18,441,480	25,761,405	7,319,925	28.4

Total, bushels. . . 22,782,130 30,301,480 7,519,350 24.9

Shipments eastward of grain received by lake, were as follows, in bushels:

Year.	1884.	1883.	Inc. or Dec.	P. c.
By canal	13,110,442	17,648,462	D.	4,538,020 25.7
By rail	4,209,464	5,698,586	D.	1,329,122 23.7

Total. . . 17,379,906 23,247,048 D. 5,867,142 25.2

Per cent. by rail. . . 24.6 24.1 0.5

The canal opened on the same date, May 7, in both years, making the seasons alike in length of navigation.

#### Coal.

Coal tonnages for the week ending July 26 are reported as follows:

Year.	1884.	1883.	Inc. or Dec.	P. c.
Anthracite	877,341	773,014	I.	104,327 13.5
Eastern bituminous	185,377	184,082	I.	1,295 0.4
Coke	51,619	62,715	D.	11,096 17.6

The Philadelphia Ledger of Aug. 4 says, "The anthracite coal trade enters the month of August in a very dull and unsatisfactory condition. After two weeks of suspension in

July, by which it was thought, even by the most conservative operators, that the trade would improve and be found, if not active, at least in a satisfactory condition, it is nevertheless found to be still tending in an almost opposite direction. That the exigencies of the trade in general require another week's stoppage, there appears to be very little doubt in the minds of some of the most prominent coal men who operate largely in anthracite. New orders are scarce, excepting for small lots, which are being filled as fast as convenience will permit. The orders booked during the past month have been almost entirely confined to the sizes for domestic consumption, and the Reading Co. reports orders on hand for stove and chestnut, the former in particular, that would require almost two full months' working at the mines to produce. The New York companies, however, have not been able to reduce their accumulated stock of coal sufficiently to be anxious for another full month of mining, and until the question of a further stoppage is satisfactorily settled either one way or the other, buyers will continue to hold off their orders. There is reported to be a noticeably better inquiry for lump coal, not, however, from manufacturers, but from housekeepers who have been induced to try lump for their open fire grates and furnaces instead of egg. Should this new scheme work well it will prove quite a saving to some of the operators who have been breaking their lump coal into smaller sizes, entailing a loss of from 50 cents to \$1 per ton. The sales of lump are, however, being made at shaded prices."

The coal tonnage of the Pennsylvania Railroad for the week ending July 26 was:

Line of road.	Coal.	Coke.	Total.
From other lines	140,667	45,712	186,379
	52,372	5,907	58,279
Total	193,399	51,619	245,018

The total tonnage this year to July 26 was 7,375,495 tons, against 6,753,317 tons to the corresponding date last year; an increase of 622,178 tons, or 9.2 per cent.

The anthracite coal tonnage of the Belvidere Division, Pennsylvania Railroad, for the seven months ending Aug. 2 was:

Year.	1884.	1883.	Inc. or Dec.	P. c.
Coal Port for shipment	51,020	61,570	D.	10,550 17.0
S. Amboy for shipment	340,633	399,877	D.	59,244 14.8
Local points on N. J. divs.	437,482	457,591	D.	20,109 4.4
Co.'s use on N. J. divs.	105,136	90,504	I.	14,632 16.2
Total	934,271	1,009,542	D.	75,271 7.5

Of the total this year 784,392 tons were from the Lehigh Region and 149,879 tons from the Wyoming Region.

Cumberland coal shipments for the seven months ending Aug. 2 are reported by the Cumberland Civilian as follows:

Shipments from mines:	1884.	1883.	Inc. or Dec.	P. c.
Cumberland & Pennsylvania	1,031,475	1,031,475		
George's Creek & Cumberland	297,853	297,853		
West Va. Central & Pittsburgh	252,525	252,525		
Direct to Balt. & Ohio	1,040	1,040		
Total	1,582,893	1,582,893		

Shipments out of region:

Year.	1884.	1883.	Inc. or Dec.	P. c.
Baltimore & Ohio R. R.	1,188,182	1,188,182		
Bethlehem, Pennsylvania R. R.	235,571	235,571		
Chesapeake & Ohio Canal	161,140	161,140		
Total	1,584,893	1,584,893		

Local deliveries are included in Baltimore & Ohio tonnage. The total shipments to the corresponding date last year were 1,379,686 tons, showing an increase this year of 203,207 tons, or 14.7 per cent.

Actual tonnage passing over the Huntingdon & Broad Top road for the seven months to Aug. 2 was:

Year.	1884.	1883.	Inc. or Dec.	P. c.
Broad Top coal	110,638	109,986	I.	652 0.6
Cumberland coal	257,845	292,485	D.	34,640 11.9
Total	368,513	402,471	D.	33,958 8.4

The Broad Top coal is mined on the line; the Cumberland is carried through for the Pennsylvania Railroad.

#### Northwestern Traffic Association.

A meeting is in progress in Chicago this week which has for its object a final settlement of the relations between the Union Pacific and the lines east of the Missouri. It is said that the meeting has under consideration changes in the famous tripartite agreement and possibly its dissolution. The relations of the Chicago & Northwestern to the other parties have been somewhat changed by its purchase of the Blair lines in Nebraska, whose traffic, it now claims, is properly local to its own lines, and should not be divided with the other roads. The meeting may result in the formation of a new pool.

#### Lake and Canal Rates.

The Buffalo Commercial Advertiser says: "The Canadian government has been making herculean efforts and spending enormous amounts of money for years in an effort to secure the Northwestern carrying trade. It had not completed its last canal enlargement scheme before a new one was decided upon—the Welland is to be provided with 14 ft. of water throughout. But this improvement will be no more efficacious in diverting trade from the New York route than the other one was. When business is fairly active the St. Lawrence will secure a portion of the trade, but when it comes to a contest for control of the business our Canadian friends will have to give way to the American route. There is too much at stake on this side to ever permit the carrying trade to be absorbed by the St. Lawrence. When it becomes necessary property can be transported from Chicago to New York at very low rates, as will be seen from the following statement of the average freight on wheat and corn from Chicago to Buffalo by lake, and from Buffalo to New York by canal during the month of July in the years named:

Year.	Canal.	Lake.
	Wheat. Corn.	Wheat. Corn.
1884.	3.6 3.2	1.9 1.7
1883.	3.9 3.6	3.5 2.3
1882.	4.4 4.0	1.9 1.7
1881.	4.3 3.8	2.6 2.2
1880.	6.0 5.4	4.8 4.3
1879.	5.2 4.7	2.5 2.3
1878.	4.3 3.8	1.7 1.5
1877.	5.4 4.7	2.6 2.2
1876.	5.9 5.4	1.9 1.2
1875.	7.5 6.9	2.8 2.6
1874.	9.5 8.5	3.3 3.0

"These are exceedingly low rates, and show that the country is now enjoying cheap transportation with a vengeance."

#### Canada Southern Line.

The following circular from the General Manager's office is dated Buffalo, N. Y., Aug. 4:

"The route of the Canada Southern Line to Philadelphia and interior points in Pennsylvania and New Jersey having been changed from the Philadelphia & Reading Railroad to the Pennsylvania Railroad, hereafter freight will be taken by this line to and from the delivery points of the latter road in Philadelphia and interior points in the territory named; also to Wilmington, Del., and points on the line of the Philadelphia, Wilmington & Baltimore Railroad. Bal-

timore deliveries remain as heretofore. Tariff of rates, shipping directions, etc., will be furnished at an early day."

#### Cotton.

Cotton movement for the eleven months of the crop year from Sept. 1 to Aug. 1 is reported by the Commercial and Financial Chronicle as follows, in bales:

Interior Markets:	1883-84.	1882-83.	Inc. or Dec.	P. c.
Receipts	2,855,922	3,575,499	D.	719,577 20.1
Shipments	2,882,771	3,534,098	D.	651,327 18.4
Stock, Aug. 1	22,307	57,886	D.	35,579 61.3
Seaports:	1883-84.	1882-83.	Inc. or Dec.	P. c.
Receipts	4,805,767	5,940,554	D.	1,134,787 19.1
Exports	3,835,700	4,664,434	D.	828,734 17.8
Stock, Aug. 1	213,789	293,690	D.	79,901 27.2

A considerable part of the shipments from interior markets appears a second time in the receipts at the seaports.

After giving a table showing the actual receipts at the seaports from plantations, the Chronicle says: "In the table below we give the receipts from plantations in another form, and add to them the net overland movement to July 1, and also the takings by Southern spinners to the same date, so as to give substantially the amount of cotton now in sight:

	1883-84.	1882-83.	1881-82.	1880-81.
Receipts at the ports to Aug. 1	4,805,767	5,940,554	4,661,024	5,775,376
Interior stocks on Aug. 1 in excess of Sept. 1	*26,849	41,401	*20,979	13,603
Total receipts from plantations	4,778,918	5,981,955	4,640,045	5,788,979
Net overland to July 1	573,605	637,098	464,338	509,799
Southern consumption to July 1	292,000	318,000	229,000	195,000
Total in sight Aug. 1	5,644,523	6,937,053	5,333,381	6,493,778

\* Decrease from Sept. 1.

"It will be seen by the above that the decrease in amount in sight to-night, as compared with last year, is 1,293,130 bales, the increase as compared with 1881-82 is 311,142 bales, and the decrease from 1880-81 is 849,255 bales."

#### RAILROAD LAW.

##### Commutation Tickets—Contract.

Some months ago a passenger on the Chicago & North-western Railroad was ejected from a train on the road under the following circumstances: The passenger in question, Mrs. E. Banerman, presented to the conductor, in payment of her fare, a 1,000-mile commutation ticket, made out in the name of "Mr. E. Banerman." The conductor declined to take it because it was not a lady's ticket, and demanded her fare. Upon her refusal to pay she was ejected from the train. It appeared that the commutation ticket had an agreement on it that it should not be transferred, nor be good unless signed in ink by the person to whom it was issued. The ticket was bought by the passenger's husband without informing the ticket agent that it was for a lady. He simply gave the name of "E. Banerman," and the agent prefixed the "Mr." The ticket was unsigned when presented to the conductor. Mr. Banerman, who was with his wife on the train, told the conductor that the ticket was bought for his wife, and she offered to sign it on the spot, but this offer was refused. The passenger brought suit against the road for damages, and recovered judgment, but this judgment was recently reversed by the Appellate Court at Chicago, which held (Banerman vs. the Chicago & North-western Railway Co.) that the contract on a ticket like the one under consideration was one into which persons might lawfully enter, and one which, when made with a full knowledge of its conditions, was valid and binding. The Court said that commutation tickets had come into very general use, that they were based on sufficient consideration, and that the conditions on which they were issued were reasonable and just. The Court held that the conductor was justified by the name on the ticket in assuming that it was not for a lady, and that he was not required to take the testimony of the husband, to the contrary, the ticket being the best and most conclusive evidence.

#### OLD AND NEW ROADS.

**Allegheny Valley.**—An application has been made to the United States Circuit Court at Pittsburgh to take the suit for the foreclosure of the mortgages on this road out of the control of the state court and transfer it to the Federal Court. Argument is to be heard Sept. 2 on the motion. Meanwhile it is stated that efforts are being made to reach some amicable arrangement with the income bondholders, and it is said that negotiations are progressing with much prospect of success.

**Anglesea.**—This road is now in operation from Anglesea Junction, N. J., about three miles south of Cape May Court House, on the West Jersey Railroad, to Anglesea, a new summer resort. The road was built last year, and is about 4 miles long.

**Atchison, Topeka & Santa Fe.**—The Wichita & Western branch of this road has been opened for business from Wichita, Kan., west to Kingman, a distance of 45 miles.

The company's statement for June and the six months ending June 30 is as follows, including the Southern Kansas lines:

	June.	1883.	S
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**Boston & Albany.**—The Attorney-General of Massachusetts has nearly finished his preparation of the case of the state against this company. The suit will be brought under the resolution of the Legislature passed at the last session, and is intended to determine the validity of the distribution by the company of the stock which it purchased from the state. No dispute exists as to the facts in the case, of the gratuitous distribution of the stock by the company, and the case will be submitted to the Supreme Court for decision entirely as to the legal points involved. The hearing will be begun in the October term and a decision is hoped for shortly afterward.

In case the court decides that the issue was illegal, some legislation will probably be asked for in regard to the stock, as it has become so mixed with the other stock of the road that it would be impossible to make a separation.

**Boston & Lowell.**—The Massachusetts Railroad Commissioners have granted a certificate of exigency authorizing this company to construct a proposed branch road from Bedford, Mass., to Bellerica. This line will follow very nearly the line of the old abandoned Bellerica & Bedford narrow gauge road.

**Buffalo, New York & Philadelphia.**—It is stated that already about one-fourth of the holders of the Pittsburgh, Titusville & Buffalo consolidated bonds have agreed to the funding plan, and it is believed that most of the holders will come in. The outlying first-mortgage bonds on which full interest will be paid, in order to preserve the property intact, are the Warren & Franklin first-mortgage bonds and the Buffalo, New York & Philadelphia first and second-mortgage. The earnings of the road have been reduced largely by the great competition in the coal business from Western Pennsylvania mines to Buffalo and the upper lakes and to Rochester and Central New York, but it is hoped that the rates on this business, which have been for some time below the actual cost of carrying it, will be increased by a pooling arrangement recently entered into. The most important lines of this road have been seriously injured by the construction of parallel and competing lines, which have, as is usually the case, not only reduced the actual amount of business carried, but have greatly injured the value of that still remaining by the reduction in rates.

The company's statement puts its floating debt at \$1,830,000, for \$1,480,000 of which collateral security is deposited. To offset this there is \$120,000 in cash and balances due the company. The company holds securities available to the amount of \$4,231,000 par value. This includes \$1,586,000 of its own bonds unissued or unsold, \$1,470,000 of bonds of other companies, and \$1,175,000 of stocks of other companies. The bonded debt of the company is now \$23,000,000, on which the yearly interest charge is \$1,419,000. Besides this the interest on land mortgages and bills payable amounts to \$117,500, and on car and steamboat trusts to \$90,000, making a total interest charge of \$1,625,500. The estimated net earnings for the current fiscal year ending Sept. 30 are \$946,000 or \$680,000 less than the interest charges, to which should be added the annual payment on the principal of the car and steamboat trusts, amounting to \$200,000. The officers of the company estimate that if the same rates had been obtained in 1884 as those which prevailed in the previous year, the deficiency would have been reduced by fully \$500,000. Nearly all the holders of the outstanding bills payable secured by collateral have agreed to extend the same until next year, before which time it is hoped that the condition of the money market will so improve that the company will be able to dispose of enough of the securities which it owns to pay them off in full.

As noted last week, the company's proposition is that the holders of all the bonds except those noted above as necessary to preserve the property intact, will accept for three years payment of one-half the interest in cash and the other in non-interest bearing scrip convertible into 6 per cent. income bonds. This proposition, if accepted, will extricate the company from its present difficulties, but the company's circular says that the plan must be agreed to at once to effect the necessary relief. Foreclosure suits, if brought, will necessarily break up the consolidation by which the present company was formed into several distinct and to some extent competing lines. It is proposed as part of the arrangements that the bondholders shall appoint a committee of three to act as trustees on their behalf and to make the exchange of scrip and bonds for the unpaid portion of the coupons. This committee will hold the surrendered coupons uncanceled, so that if the proposed arrangement should not become effective, or if it should be otherwise necessary for the protection of the bondholders, they can be returned to the owners with an unimpaired lien on the property. The trustees so appointed are Charles M. Fry of New York, E. A. Rollins of Philadelphia, and Achille Andrea of Frankfurt, Germany. The application for a receiver has been dropped for the present.

**Canadian Pacific.**—The Ontario & Quebec Division of this road, running from Ottawa, Ont., to Toronto, about 200 miles, has been completed and was opened for business Aug. 4. At Toronto it connects with the Credit Valley Railroad, which is also controlled by the Canadian Pacific, and which runs from Toronto to St. Thomas, where connection is made with the Canada Southern for western points. This in effect gives the Canadian Pacific a line from Montreal by way of Ottawa and Toronto to Detroit, which will compete with the Grand Trunk for through business.

**Cape Fear & Yadkin Valley.**—The track of this road was completed on Aug. 1 to the crossing of the Carolina Central road at Shoe Heel, N. C., 37 miles southwest of Fayetteville. The road is now completed from Shoe Heel to Greensboro, 135 miles, and regular trains are running through. Work is in progress on both ends of the line, from Shoe Heel southward to Bennettsville, S. C., and from Greensboro northwest to Mount Airy.

**Central Iowa.**—Mr. Alfred Sully, of New York, President of one of the conflicting boards of directors, says that the statement that a *quo warranto* suit had been begun at Marshalltown, Ia., to oust him and his board and charging them with fraud and conspiracy in obtaining election and also in various contracts, is not true, and no such action has been begun. The statement was made on the authority of a press dispatch sent from Marshalltown.

**Central Station & Railway Co. of Cincinnati.**—The new Union station in Cincinnati, on Central avenue, has been finally completed, and formally opened for business on the evening of July 31, when a reception was held in the building. The cost of the station is about \$800,000. It was built by the Cincinnati, Indianapolis, St. Louis & Chicago Co., but has recently been transferred to the company under the above name, in which the above named road, the Cleveland, Columbus, Cincinnati & Indianapolis and the Baltimore & Ohio were equal shareholders.

**Central Vermont.**—The following circular from the office of J. Gregory Smith, President of this company, which fully explains itself, though dated July 1, has but just come to hand, and even the fact of this final action has not been published:

"By virtue of the order and decree of the Court of Chancery of the state of Vermont the receivership of the Ver-

mont Central and Vermont & Canada railroads, which for nearly 30 years past has been the fruitful source of complicated, expensive and embittered litigation, is finally terminated and closed and the receivers and managers fully discharged from the possession and management of said railroads and property.

"The roads and property, together with all the leased lines heretofore managed by said receivers, are ordered to be turned over to the Consolidated Railroad Co. of Vermont, a corporation organized under the laws of Vermont, under the foreclosure of the first mortgage of the Vermont Central Railroad.

"In compliance with said order and decree, the property of the late receivership has been duly inventoried and the inventory filed with the Court and approved, and the said roads and property and all leased roads and property of the receivership, have this day been duly transferred and delivered over to said Consolidated Railroad Co. of Vermont, and accepted by them. And on this day, the said Consolidated Railroad Co. of Vermont, in accordance with the general plan of compromise and consolidation, accepted and agreed to by the security holders of the said receivership, and other parties in interest, has executed a lease of its roads and property, received from said receivers, to the Central Vermont Railroad Co., for the period of 99 years, and has assigned and transferred to said Central Vermont Railroad Co. the leases of all the roads and property heretofore leased and held by said receivers, and the Central Vermont Railroad Co. has duly accepted the same.

"From and after this date, therefore, the Central Vermont Railroad Co. assumes the management and control, in its corporate capacity, of all said roads and property subject to the mortgage executed by said Consolidated Railroad Co., and will assume and pay the outstanding obligations of the former receivers imposed upon said Consolidated Railroad Co. by the decree and order of the Court of Chancery.

"Heads of departments will issue the proper orders for carrying out the foregoing circular."

Of this circular the *Boston Advertiser* says: "This is the result of the reorganization of the Vermont Central and the Vermont & Canada. By it the Central Vermont becomes the virtual owner (for the Consolidated Vermont was only an intermediary organized for the purpose) of a line from Windsor to Rouse's Point, with short spurs from Essex Junction to Burlington and from Swanton Junction to Canada line—in all 190 miles, all of which is first-class, with ample and excellent equipment and with extensive shops. The indebtedness is \$7,000,000 of first mortgage 5 per cent. bonds, together with a few thousand dollars of reorganization expenses and floating debt. There are 7,500 shares (par value \$100 each) of preferred capital stock, most or all of which is believed to be held in three blocks of about equal size—one by President Smith and near friends, one by James R. Langdon and B. P. Cheney, and one by Joseph Hickson or the Grand Trunk Railroad Co. This stock is entitled to 6 per cent dividends, if earned, but not cumulative, in preference to the common stock. It cannot be learned that any common stock has been issued.

"The company operates under lease the Rutland Railroad and the Addison Railroad, which leases have six years from next January to run, the Montpelier & White River (to Barre), the Montreal & Vermont Junction and the Stansstead, Shefford & Chambly, both of Canada; the Vermont & Massachusetts, from Brattleboro to Miner's Falls; the New London & Northern, and the Brattleboro & Whitehall to Jamaica (36 miles, as far as built). The rentals under some of these leases are not stated, so it is impossible to make up an aggregate of the fixed charges for public information. If it is assumed that the roads all earn their rentals, the fixed charges on the reorganized line proper are only \$350,000 annually (payable half yearly), or about \$1.842 per mile.

"It should be stated, however, that while most of the old security holders reluctantly assented to the reorganization, a few did not. Mr. Rowland G. Hazard, of Rhode Island, as a stockholder in the Vermont & Canada—one of the roads in the consolidation—protested, and failing to get the directors of his company to act as he desired, he brought a bill in equity in the United States Circuit Court in Vermont to invalidate the scheme, and that is still pending. The merits of the case were quite exhaustively discussed upon a motion for an injunction. The injunction was denied; and the denial was accompanied by an opinion by Judge Wheeler which indicates that if he hears the case upon its merits Mr. Hazard will have no hope short of the Supreme Court of the United States, where, he says, he shall carry the case if necessary. There are one or two other suits by old security holders, which have not yet come on for hearing in any form. Except for these suits the reorganization is complete, and the men who control and own the property, subject to its scaled debt, are the same in greater part who have managed it for nearly 25 years."

**Chicago, Burlington & Quincy.**—Officers of this company deny positively the reports that arrangements are in progress to build an extension of the road west of Denver. They say that the company has no desire to build a line to Ogden or to connect with the Denver & Rio Grande Western, and that the business between Salt Lake and Ogden will certainly not warrant the construction of a third line in addition to the two now existing.

**Chicago & Northwestern.**—Mr. M. Hughitt, Second Vice-President and General Manager, has issued the following notice, dated Aug. 1: "This company has purchased and now owns in fee the railroad property of the Chicago, Iowa & Nebraska Railroad Co., extending from Clinton, Iowa, to Cedar Rapids; the Cedar Rapids & Missouri River Railroad Co., extending from Cedar Rapids to Council Bluffs; the Maple River Railroad Co., extending from Maple River Junction to Mapleton, with a branch from Wall Lake via Sac City to Kingsley, which have heretofore been operated by it under leases. From this date the property will be operated and managed as a part of the system of the Chicago & Northwestern Railway Co., the owner of the property and franchises under its purchase."

It is reported that this company will issue \$6,000,000 new 5 per cent. 25 year debenture bonds. Of the issue nearly \$2,000,000 will be expended in the purchase of the Nebraska tributaries of the Iowa Blair roads. The Blair system is hardly up to the standard condition of the Northwest's roads, and it is said that to put them into good working order will require the expenditure of about \$4,000,000, and it has been deemed the wisest way to raise this money by increasing the issue of debentures required in the Blair purchase agreement. The annual report will, it is expected, explain the matter by a statement of the facts at length.

**Connecticut & Passumpsic Rivers.**—It is again reported that a controlling interest in this company has been sold to parties acting in the interest of the Connecticut River Railroad Co. The report is not improbable, but requires further confirmation.

**Denver & Rio Grande.**—The application for a receiver for the Denver & Rio Grande Western has been withdrawn, with the consent of the Denver & Rio Grande Co.

After an interruption of six weeks, caused by several washouts and by the taking up of one mile of track by order of President Lovejoy, through trains began running again between Denver and Salt Lake City on July 15.

A dispatch from London states that the English, Scotch and Dutch holders of Denver & Rio Grande securities have combined for the purpose of attaining an independent representation in the future management of the affairs of the road. The great majority of this syndicate express gratification over the appointment of Mr. Jackson as receiver. The combination has appointed a committee to secure the desired representation.

Denver dispatches state that the Court has ordered Receiver Jackson not to recognize the lease of the Denver & Rio Grande Western, and to pay no attention to the guarantee of that company's bonds by the Denver & Rio Grande. The Receiver is now running trains over the Western road under a temporary agreement, by which a proportion of the earnings on all through business is paid over to that road, and it also receives the earnings on local business and pays a rental for the use of equipment. It is generally understood that the interest due Sept. 1 on the Denver & Rio Grande Western bonds will not be paid, and it is expected that the result will be a foreclosure of the mortgage and the sale of the road with its probable purchase by the Denver & Rio Grande Co. or parties interested therein.

**East & West, of Alabama.**—A movement is now on foot to urge this company to extend its line from the present western terminus at Broken Arrow, Ala., westward to Birmingham, about 40 miles, the object being to bring coal from the Coosa Fields to Birmingham and also to open a large district to the trade of that city. The road is now completed and in operation from Cartersville, Ga., to Broken Arrow, 112 miles, track having been laid on the gap of 8 miles between Cross Plains, Ala., and East and West Junction, which separated the two divisions of the road.

**Grand Tower & Carbondale.**—A suit has been begun asking for the appointment of a receiver for this road, which extends from Grand Tower, Ill., on the Mississippi River, to Carbondale, on the Illinois Central road. The road is owned by the St. Louis Ore & Steel Co., and the application for a receiver is in consequence of the difficulties of that company for which a receiver has already been appointed in Missouri. The railroad being in Illinois a special appointment is required for that property.

**Greenville & Laurens.**—At a meeting held in Greenville, S. C., July 25, delegates were elected to represent the stock owned by the county in this company at the coming annual meeting. The meeting adopted resolutions setting forth that contracts for grading the entire road from Laurens, S. C., to Greenville, are now made with responsible parties and that a survey has been completed showing an eligible route across the mountains for an extension to Asheville, N. C., and the representatives of the county are therefore instructed to vote to give authority to the directors of the company to expend any sums remaining in their hands after the grading of the road from Greenville to Laurens is completed, in grading the extension of the road to Asheville.

**Gulf, Colorado & Santa Fe.**—This company has always been opposed in every possible way by the Missouri Pacific and its controlled lines, and has never been able to make any traffic agreement with that company for through business. It has been understood that the Gould interest was anxious to purchase the road, but its owners have always refused to sell and still retain possession of their property. The company has been recently making arrangements for the extension of its road through the Indian Territory to a connection with the St. Louis & San Francisco, and has secured the necessary permission from Congress to build a railroad through the territory. It is now announced that a traffic agreement has been concluded between this company and the Missouri Pacific under which through business will be exchanged and there will be an understanding as to the maintenance of rates to and from Texas points. The new arrangement took effect August 1, and as soon as the necessary changes in time can be made, close connection will be made by passenger trains on the two roads and other facilities given for the exchange of business. Negotiations for this agreement have been conducted very quietly but it looks very much as if the Missouri Pacific Co. had finally come to terms and agreed to grant what the Gulf, Colorado & Santa Fe wished, rather than see another line in the Indian Territory parallel to the Missouri, Kansas & Texas.

**Illinois Midland.**—Notice is given that, by order of the Court, all persons holding claims against this road are required to present them to N. W. Bransom, Special Commissioner, on or before Sept. 1 next, and to make proof of the same; and all claims not presented by that date will be barred from payment out of any funds in custody of the Court. Creditors whose claims have been already allowed by orders of Court will not be required to make further proof, unless required to do so by special order, and employees whose names appear on the Receiver's pay-rolls will not be required to present or prove their claims, the pay-rolls being taken as *prima facie* evidence thereof.

Special Commissioner Bransom gives notice that claims should be sent to him at Petersburg, Ill., and that they should be sworn to before some proper officer. On application, he will furnish the proper blanks for proofs. They should set forth not only the nature and amount of the claim, but also the name of the Receiver by whom the debt was contracted. The dates of the receiverships are as follows: George Dole, Receiver, Sept. 11, 1875, to Aug. 31, 1876; R. J. Rees, Receiver, Sept. 1, 1876, to Dec. 10, 1878; L. Genis, Receiver, Dec. 11, 1878, to April 4, 1882; D. H. Conklin, Receiver, appointed April 4, 1882, and still in office.

The cases are to be submitted for final orders and decree of sale on Nov. 10 next.

**Iron.**—The Iron Railway Co. has been organized by the bondholders who bought the Iron Division of the Toledo, Cincinnati & St. Louis Railroad at foreclosure sale. The new company will issue \$800,000 stock in all, giving to each holder of a \$1,000 first-mortgage bond \$1,170 in the stock of the new company, representing the amount of his original bond, two years' unpaid interest, and the assessment paid to meet the cost of foreclosure. This issue will require \$585,000, leaving \$15,000 in the treasury. The first-mortgage bondholders thus receive a security equivalent in amount to the original bonds which they held before the consolidation of the road with the Toledo, Cincinnati & St. Louis, but the holders of the income bonds and other securities issued by that company will lose the entire amount. The new company will issue no bonds whatever, the stock representing the entire capital, and as the road has always had a paying local business it is expected that dividends can be made regularly on the new stock. The Iron Railway extends from Ironton, O., on the Ohio River, to Centre, 13 miles, with 5 miles of short branches. The income bondholders have filed a protest.

**Kansas City & Independence.**—This company has filed articles of incorporation to build a railroad from Kansas City, Mo., east to Independence. The capital stock is \$100,000, and the office is in Kansas City. The road will be 10 miles long and of standard gauge.

**Manhattan.**—At a special meeting of this company held Aug. 1, the agreement of consolidation with the New York



and the Metropolitan Elevated companies was finally ratified. The exchange of stock of the Consolidated Manhattan Co. for the stock of the old Manhattan, the New York and the Metropolitan companies has already begun, and a large amount has been exchanged.

**Metropolitan Elevated.**—At the special meeting of the stockholders on July 31 the agreement for consolidation with the Manhattan and the New York Elevated companies was approved by a vote of 38,695 shares out of a total of 65,000. There were 8,990 shares voted against the consolidation and the remainder were not voted at all. Besides the consolidation or merger agreement, an agreement was also ratified providing for the modification of the original lease of the Metropolitan road to the Manhattan, which in effect agrees to the payment of 6 per cent. dividends for the term of lease in place of the 10 per cent. provided for by the original lease. A final agreement was also ratified providing for the exchange of Metropolitan stock for Manhattan consolidated at the rate of 110 shares for 100 shares of Metropolitan, as provided for in the consolidation agreement.

**Mexican Railroad Notes.**—The railroad from Pueblo to Matamoros-Izucar during June carried 11,717 passengers. The road is not yet completed. Surveys are being made for a branch from Pueblo to Atlixco, but this branch is to be operated with mules for motive power.

Work is being pushed on the railroad from Merida to Valladolid, in Yucatan. A new town has been established at Tixkokob, where a station has been built and streets laid out. The branch from Merida to Nolo showed in June a large movement of freight.

The engineers of the Tuxtla Railroad, in the state of Vera Cruz, are finishing their plans for the first section which extends from Omitixpan, on the San Juan River, 20 miles. In this section the road rises only 95 ft., and all the bridging required will be one small truss bridge and eleven culverts.

**Mirimichi Valley.**—The contractors on this road have pushed their work so rapidly that it is expected by the close of the present year that the track will be completed from Chatham Junction, N. B., to Blackville, 20 miles, and on the western end from Gibson to Cross Creek, 25 miles. The company has rented two locomotives for construction purposes and has 20 flat cars for use on the road. Nearly all the rails required have been received from England, and other necessary supplies are also on hand.

**Minneapolis, Sault Ste. Marie & Atlantic.**—The contractors, Messrs. Henry & Balch, are now at work on the grading of this road east and west from Cameron, Wis., where the line crosses the Chicago, St. Paul, Minneapolis & Omaha. Some thirty miles of road-bed are reported to be graded, with several bridges finished. Tracklaying is now in progress from Cameron, and about 10 miles of rails are reported down, five miles each way from the crossing.

**New York Elevated.**—A suit has been begun in the New York Supreme Court by Stephen V. Harkness against this company and the Manhattan Company on his own behalf and on behalf of all other stockholders who may wish to join to prevent the carrying out of the new merger agreement. The plaintiff refused to assent to the original merger agreement of October, 1881, and now thinks that the new contract is prejudicial to his rights, and claims that the New York Elevated Co. be ordered to collect the money due it from the Manhattan under the original lease of 1879, and be enjoined from doing any act looking to the carrying out of the present consolidation.

At the special meeting of the stockholders held Aug. 1, the agreement for the consolidation with the Manhattan and the Metropolitan companies was ratified. A new board of directors was elected at the same time, as it was considered necessary that the directors upon whom will devolve the duty of executing the consolidation must be different persons from the directors of the Manhattan Co., who will also have to act upon the agreement.

**New York & New England.**—A bill in equity to foreclose a mortgage upon a section of the Boston end of this road has been begun by Joseph W. Clark and others as trustees in the Massachusetts Supreme Court. The mortgage in question was given by the Boston & New York Central Co., which was merged a number of years ago in the Boston, Hartford & Erie, to which the New York & New England Co. is successor. An argument was heard last week on the question of jurisdiction, the company claiming that the road is now in the hands of the Receiver appointed by the United States Circuit Court. Decision was reserved.

The Receiver's statement for June and the six months ending June 30 is as follows:

	June, 1884.	1883.	Six months, 1884.	1883.
Earnings.....	\$283,531	\$306,691	\$1,591,495	\$1,695,313
Expenses.....	215,364	243,176	1,197,312	1,502,096
Net earnings.....	\$68,167	\$63,515	\$294,183	\$162,317
Per cent. of exports.	76.0	79.2	81.5	90.3

For the six months there was a decrease in gross earnings of \$73,818, or 4.6 per cent., with a decrease in expenses of \$205,684, or 13.7 per cent., the result being a gain of \$131,866, or 81.4 per cent., in net earnings.

**New York, West Shore & Buffalo.**—In New York, July 30, a suit was begun by Attorney-General O'Brien to oust Theodore Houston and Horace Russell from their positions as Receivers of this company. The proceeding is based upon a charge that the appointment of these Receivers was illegal when made, and upon a claim that Mr. Houston should not have been appointed in view of his connection with the affairs of the company from the beginning. The application was made to Judge Daniels in Orange County, and an order was granted directing the Receivers to show cause in New York on Aug. 5 why an order should not be granted removing them. A hearing was had on that day and decision reserved. The action of the Attorney-General was made on application to him by W. H. Reese and other holders of bonds, who submitted affidavits in support of their claims, further supported by an affidavit of Warren Currier, who has heretofore appeared in proceedings against the management of the company. The Attorney-General granted this application for the reason that he thinks the appointment may not be legal under the present law, as the application for a receivership was not made in the city or county in which the railroad company had its principal office or in an adjoining county. The second reason is his belief that the Receivers, in accordance with the order appointing them, are about to issue certificates for the past indebtedness of the company in derogation of the rights of bondholders.

The Receivers state that in their belief this proceeding simply amounts to a renewal of the Currier suit which was begun sometime ago, but was finally thrown out by the court.

A meeting of bondholders, called by the trustee, was held in New York, Aug. 5, with a large attendance. After some discussion of the situation resolutions were adopted without dissent, requesting the United States Trust Co., as trustee under the first mortgage, to proceed with the foreclosure as speedily as possible, and to take the necessary steps to pro-

ceed the sale of the property at the earliest possible date, provided that at the sale the road shall be bought in in the interest of the bondholders. It was also resolved to appoint an advisory committee of five bondholders to ascertain the condition of the company, to advise with and assist the trustee, and to submit a plan for the future management and reorganization. It was resolved that no member of the committee should be a stockholder or officer in either the West Shore Co. or the North River Construction Co. The chairman of the meeting appointed as the committee J. P. Colgate, H. F. Spaulding and J. D. Probst of New York; H. W. Bartol of Philadelphia, and George M. Fullman of Chicago. This committee will begin its work at once.

At the meeting, Judge Horace Russell, one of the receivers, spoke briefly, saying that the road was earning its operating expenses since the appointment of the receivers notwithstanding the low rates prevailing on all its business. Had the rates been the same as last year it would have been nearly sufficient to provide for the interest on the bonds, and he had no doubt that in time the road would earn a reasonable interest on its cost. The receiver's certificates thus far issued are for supplies and wages alone.

**Oregon Railway & Navigation Co.**—The Mountain Division or Baker City Branch is now completed and in operation to La Grande, Ore., 25 miles westward from the late terminus at Meecham and 105 miles from Umatilla Junction. Work is being pushed on the extension to Baker City as fast as possible.

**Oregon & Transcontinental.**—It is announced that the directors of this company have decided to issue collateral bonds to the amount of \$12,000,000, bearing 7 per cent. interest, and running for 10 years. These bonds are to be used in taking up the company's floating debt, which amounts to about \$11,200,000, and are to be secured by a deposit of all the stocks and bonds owned by the company. A large part of these securities are now pledged for temporary loans, and some arrangements will have to be made for their transfer to the trustees before the new bonds can be issued.

**Pennsylvania.**—Near midnight on Aug. 4 a fire started in the ferry-house of this company in Jersey City, its origin being an explosion of gas, but the cause of the explosion is unknown. The fire spread very rapidly in the wooden building, destroying completely the ferry-house and slips, with the offices of the division and general superintendents, and the passenger station, with the waiting rooms and ticket offices. The train-house being built with brick walls and iron roof, resisted the fire and was not destroyed, but great exertions were required to prevent the fire from spreading to the adjoining freight piers. The waiting room was a very handsome one and very complete in its fittings. The total loss is estimated at about \$400,000, which is to be met from the company's insurance fund, as there is no outside insurance upon the property. The fire caused temporary embarrassment and confusion in the passenger service of the company, as the ferry boats were unable to land at the usual place, and of course trains were unable to run into the station. A temporary service was at once arranged, the ferry boats landing at the freight pier and trains starting from the freight tracks north of the passenger station, and a large force was set to work to rebuild almost before the fire was out. It is expected by the close of the week that the ferry-boats will be able to land at the usual place, and that the trains will use the train house, temporary offices being erected. Plans are already in preparation for a new station.

**Philadelphia & Reading.**—The interest due Aug. 1 on the second series consolidated 5 per cent. bonds was not paid. The amount of these bonds outstanding by the last report was \$1,600,000. No provision has been made for the payment of interest on the income bonds or adjustable scrip, and it is understood that holders of the scrip will give the necessary notice to the trustees to sell the bonds pledged as security for the scrip, as soon as the required time (90 days) has passed from the date of the default.

**Reading & Pottsville.**—In Pottsville, Pa., July 31, a decision was filed in the injunction case of the Philadelphia & Reading Co. against this new company. The Court dissolves the preliminary injunction so far as restraining the Reading & Pottsville Co. from laying track is concerned, although the injunction is continued until a further hearing with regard to the building of sidings and shops. This is regarded as practically ending the litigation. The Reading & Pottsville Co. immediately set a gang of men at work laying track into the city of Pottsville, and that portion of the line will probably be very quickly completed.

**Richmond & Danville.**—This company is renewing several spans of the old wooden bridge across the James River at Richmond. The new spans are of iron, 130 ft. long each. The work of replacing the entire bridge with iron will be continued gradually as required.

**Rochester & Pittsburgh.**—As previously noticed, this company made default on the coupons due Aug. 1 on the second mortgage bonds. In Rochester, Aug. 4, a notice of complaint in action was filed at the suit of the Union Trust Co. at New York as trustee under the second mortgage. The suit is brought to foreclose this second mortgage and sell the road in consequence of the default in interest. The complaint states that the amount of bonds authorized under this mortgage was \$4,000,000, of which \$2,615,000 have been issued by the trustee. Of this sum \$1,132,500 were sold and the remainder pledged to secure the floating debt.

A plan of reorganization, it is stated, will shortly be submitted to the holders of the company's securities. Under this plan it is proposed to issue \$5,000,000 preferred and \$10,000,000 common stock. The preferred stock will be sold at 60, one share of common to be given with each share of preferred as a bonus, and the money so raised will be used in paying the floating debt claims, car trusts, and second mortgage bonds. The remaining \$5,000,000 common stock will be issued to the present stockholders.

**Rome & Chattanooga.**—The company which was chartered four years ago for the purpose of building a railroad from Rome, Ga., to Chattanooga, Tenn., has been revived and a number of subscriptions have been secured to the stock. The projectors have put an engineer corps in the field for the purpose of making a survey of the line. It is not decided as yet whether further proceedings will be had under the old charter or whether a new company will be organized.

**St. Paul, Minneapolis & Manitoba.**—The extension of the Portland Branch from Portland, Dak., north by west to Larimore, on the Devil's Lake extension has been completed and opened for business. The extension is 30 miles long, making the total length of the branch from Everett to Larimore 77 miles. This extension gives the company a second or loop line from St. Paul to Devil's Lake by way of Fergus Falls and Breckenridge, which is more direct than the original line by way of Grand Forks, and through trains to the Devil's Lake and Turtle Mountain country will be run by the through line.

**San Antonio & Gulf.**—The proposed railroad from San Antonio, Tex., to Aransas Pass is likely to fall through, as very few subscriptions have been secured. It is said that a number of the merchants of San Antonio opposed it because they feared that a large city would be built up at the Pass which would be a rival to San Antonio, and partly because they supposed that if there was any prospect of a railroad paying it would be built by other parties.

**Terre Haute & Indianapolis.**—The track of this company's Terre Haute & Logansport Division is now laid to Lakeville, Ind., 13 miles north of Plymouth and 57 miles from the old terminus at Logansport. The work of ballasting the new track is in progress. From Lakeville north to South Bend, 10 miles, the grading is about completed and tracklaying is in progress. The extension is all laid with steel rails and has no grades over 26.4 ft. per mile, except for a short distance going out of the Wabash Valley at Logansport, where it is 40 ft. per mile. South Bend is to be the terminus of the line.

**Texas Midland.**—This company is organized to build a railroad from Waco, Tex., eastward through Palestine to the Louisiana line to connect with the Vicksburg, Shreveport & Pacific road. The length of the projected line is about 200 miles.

**Toledo, Cincinnati & St. Louis.**—The Iron Division bondholders have reorganized, as noted elsewhere.

**Troy & Greenfield.**—The old Troy & Greenfield Co. has always maintained its separate organization, and has from time to time urged its claim upon the road which is now owned and operated by the state of Massachusetts, claiming under the original agreement the right to redeem its property upon the payment of a very much smaller sum than the state has expended in the completion of the road, which includes the Hoosac Tunnel. Last year the Legislature passed a resolution authorizing the Governor and Council to make some settlement of the claims on the road of the old company, in order that the state might hold a clear and unimpeachable title to the property. Governor Robinson has now, with the approval of the Council, completed an agreement by which the state will pay the company \$100,000 in full for its franchises and other rights in the property, and will also purchase all the outstanding stock at \$8 a share. The purchase of the stock will require about \$200,000 additional, making in all \$300,000 which the state will pay for the claim of the old company. The original demand made by the company was for \$1,500,000. The state has now a complete title to the road without any shadow, and will be able to sell the property should the Legislature so decide.

**Wabash, St. Louis & Pacific.**—The following circular has been issued by the Receivers, under date of July 30: "On June 30 the Receivers gave notice designating the bonds of the several roads comprised in the Wabash system on which the Court had ordered the interest paid from the income and profits of the said lines—it having been ascertained that the interest had been heretofore earned on these bonds. The Receivers, therefore, now give notice to the holders of such bonds that the coupons will be paid as soon as the current earnings will admit of such payment. Due notice of the time of payment will be given, and in the following order of maturity, viz:

North Missouri first mortgage, due July 1.  
Wabash, St. Louis & Pacific, Chicago Division, first mortgage, due July 1.  
St. Louis, Council Bluffs & Omaha first mortgage, due July 1.  
Toledo & Illinois first mortgage, due Aug. 1.  
Lake Erie, Wabash & St. Louis first mortgage, due Aug. 1.  
Great Western first mortgage, due Aug. 1.  
Illinois & Southern Iowa first mortgage, due Aug. 1.  
Decatur & East St. Louis first mortgage, due Aug. 1.  
Brunswick & Chillicothe first mortgage, due Aug. 1.  
Clarinda Branch first mortgage, due Aug. 1.  
Toledo, Wabash & Western consolidated mortgage, due Aug. 1.  
Funded debt bonds, 7s, due Aug. 1.  
Funded debt bonds, graduated, due Aug. 1.  
St. Louis, Kansas City & Northern real estate, due Sept. 1.  
Scrip certificates, due Sept. 1.  
Scrip certificates, due Oct. 1.  
Wabash Railway 7s of 1879, due Oct. 1.  
St. Charles Bridge first mortgage, due Oct. 1.  
St. Charles Bridge second mortgage, due Oct. 1.  
Omaha Division first mortgage, due Oct. 1.  
St. Louis, Ottumwa & Cedar Rapids first mortgage, due Oct. 1.  
Scrip certificates, graduated, due Nov. 1.  
Quincy & Toledo first mortgage, due Nov. 1.  
Toledo & Wabash second mortgage, due Nov. 1.  
Wabash & Western second mortgage, due Nov. 1.  
Great Western second mortgage, due Nov. 1.  
Toledo W. & W. consolidated mortgage, due Nov. 1.  
Boone County & Booneville first mortgage, due Nov. 1.  
Hannibal & Naples first mortgage, due Dec. 1.

"These coupons are to be paid from the income, profits and other sources, available to the Receivers, which, since the property has been in their hands, have not been sufficient to commence payment of the July coupons, but which, according to the best judgment they can form in the working of the system thus far, will enable them, before the close of August, to commence payment, and before the close of the year to pay all the coupons above designated.

"To the holders of the bonds on the several roads on which the Receivers were not ordered to pay the coupons, we have to state that, under the orders of the Court, separate accounts of earnings of each road are to be kept, in order that payments of interest may be resumed whenever possible, and that if not possible, the accounts may at least serve as a basis for an equitable settlement. To that end, under the directions of the Court, accomplished and disinterested experts are now preparing a report to be used as the basis for an apportionment of earnings to each separate road comprised in the system upon which interest has not been ordered to be paid."

A meeting of the board was held Aug. 5 and approved the plan for the reorganization of the company. The outlines of the plan are as follows: A friendly suit for the foreclosure of the general and collateral trust mortgages will be followed by the organization of a new corporation. This company will issue at once debenture bonds to the extent of \$20,000,000, bearing 6 per cent. interest, payable from earnings and non-cumulative. These will be exchanged dollar for dollar for the \$17,000,000 general mortgage bonds which have been issued, and the remaining \$3,000,000 used for other purposes. Stockholders of the present company will be entitled to new stock according to their present holdings on the payment of \$6 a share, and for the fresh money they will receive first preferred stock at par. The assessment on the stock will produce in a round sum \$3,000,000, which, with the excess of the debenture bonds, will be devoted to the payment of the floating debt and the retirement of the collateral trust bonds pledged as security for it. This change in the character of the funded debt will reduce the present fixed charges, it is said, \$1,500,000 a year. The new company will make arrangements with the subsidiary lines, now operated under lease, according to their earning power.